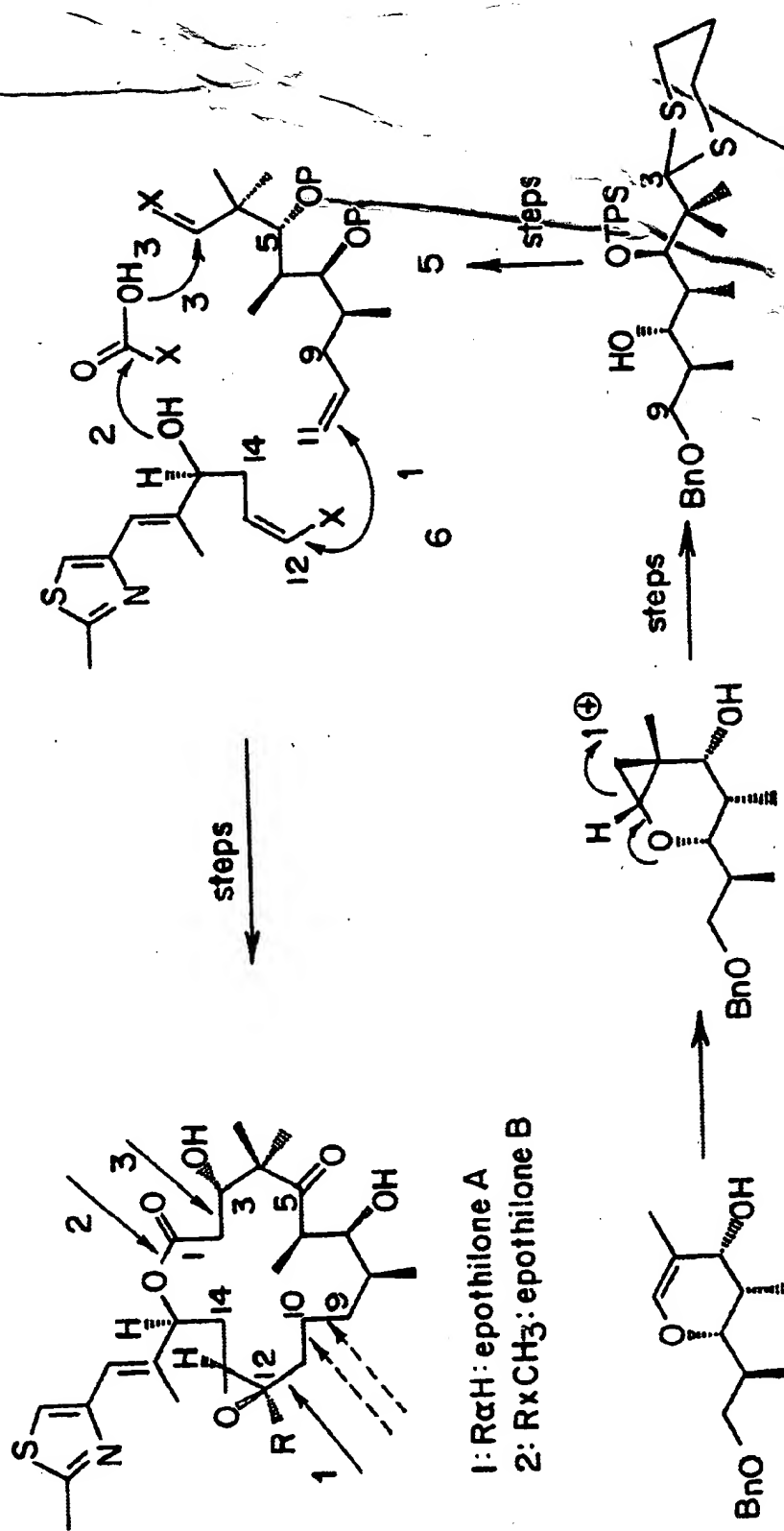




FIG. 1A



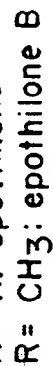
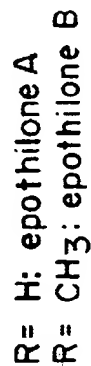
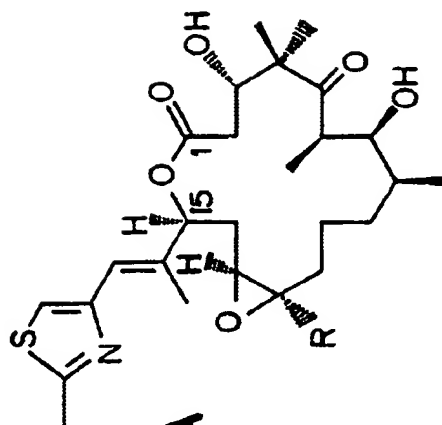
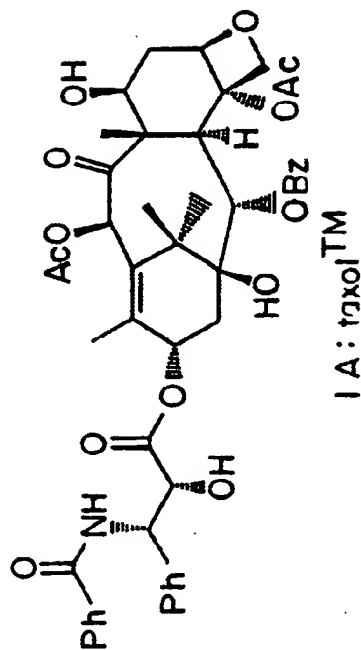
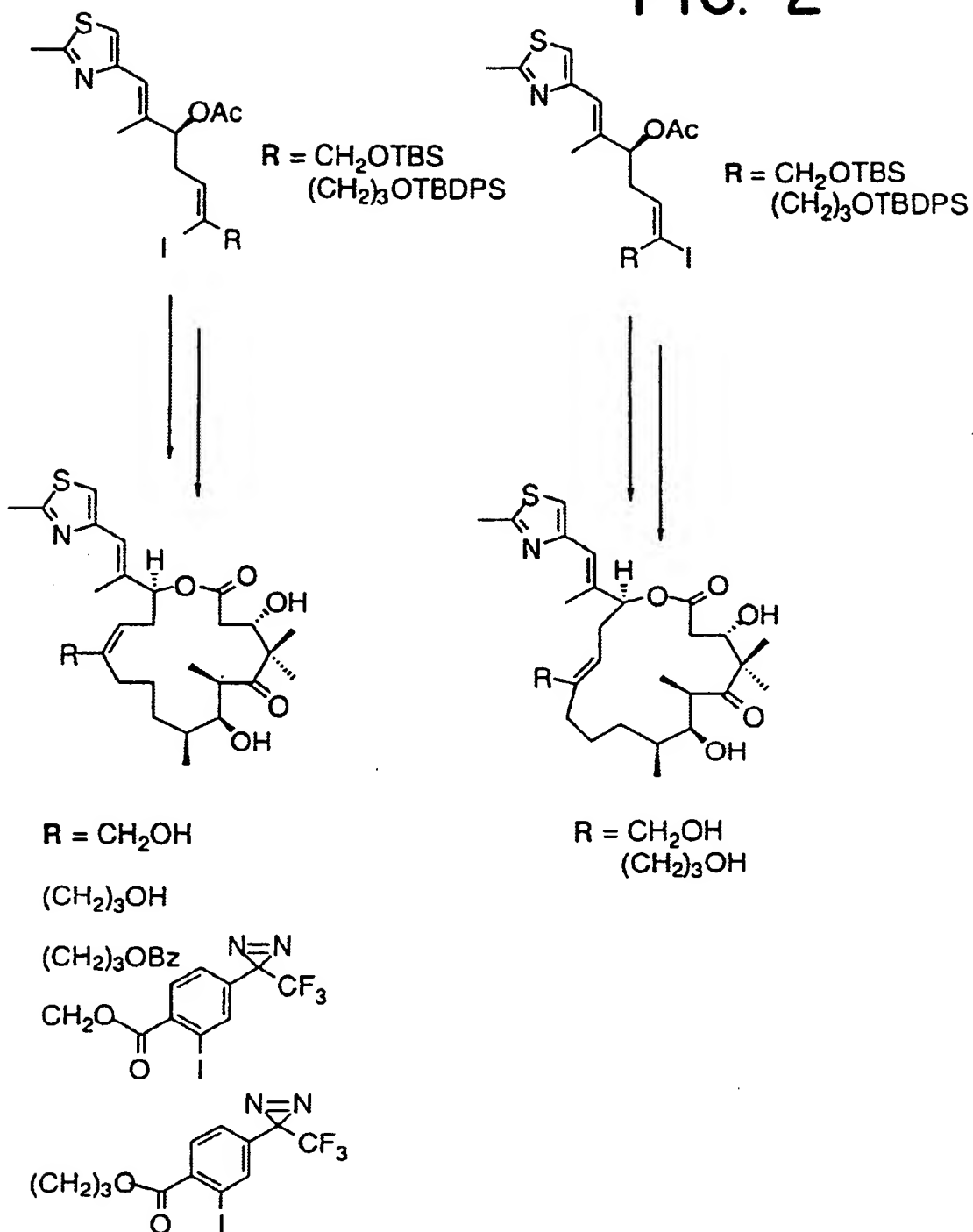


FIG. 2



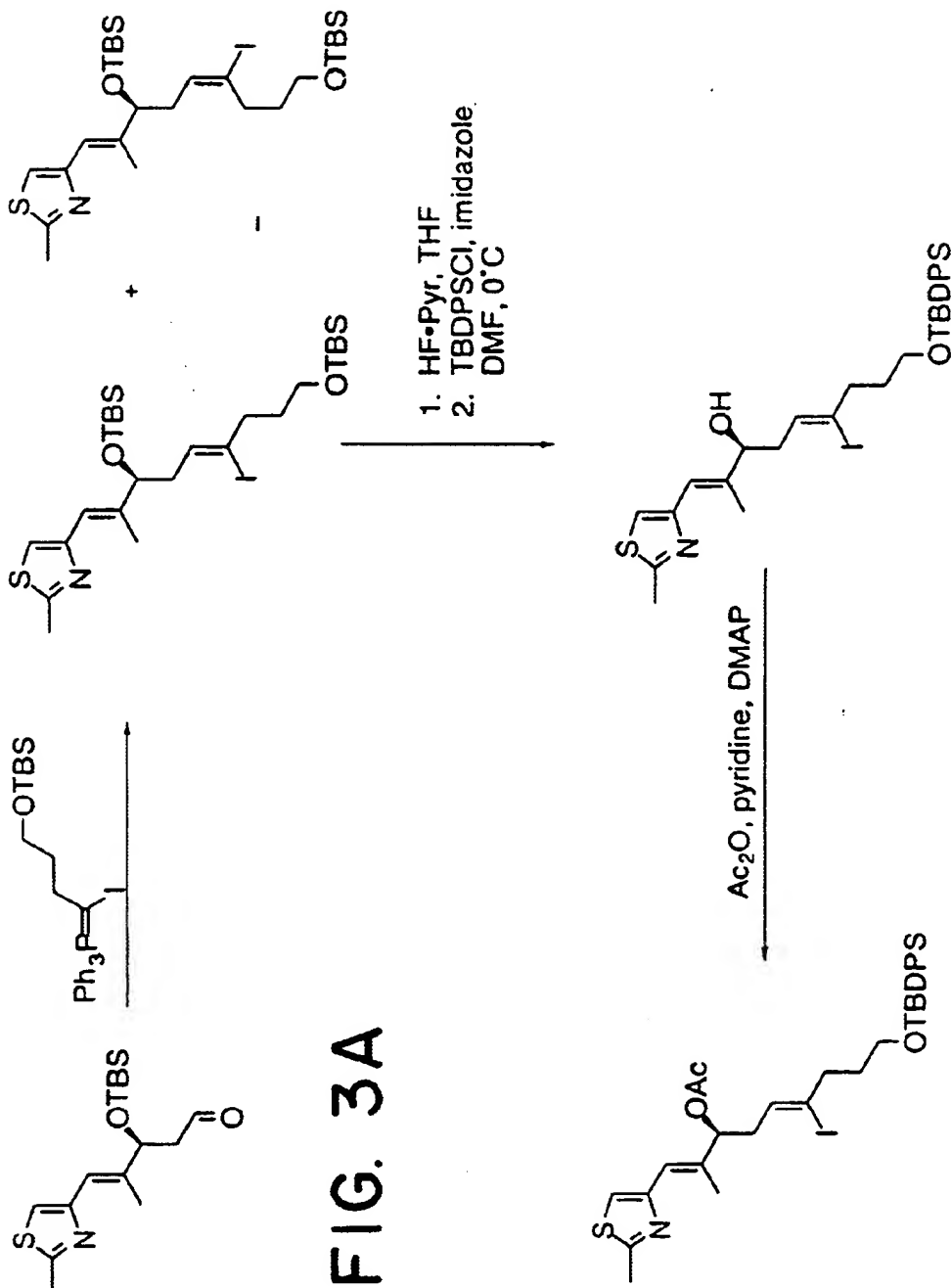


FIG. 3B

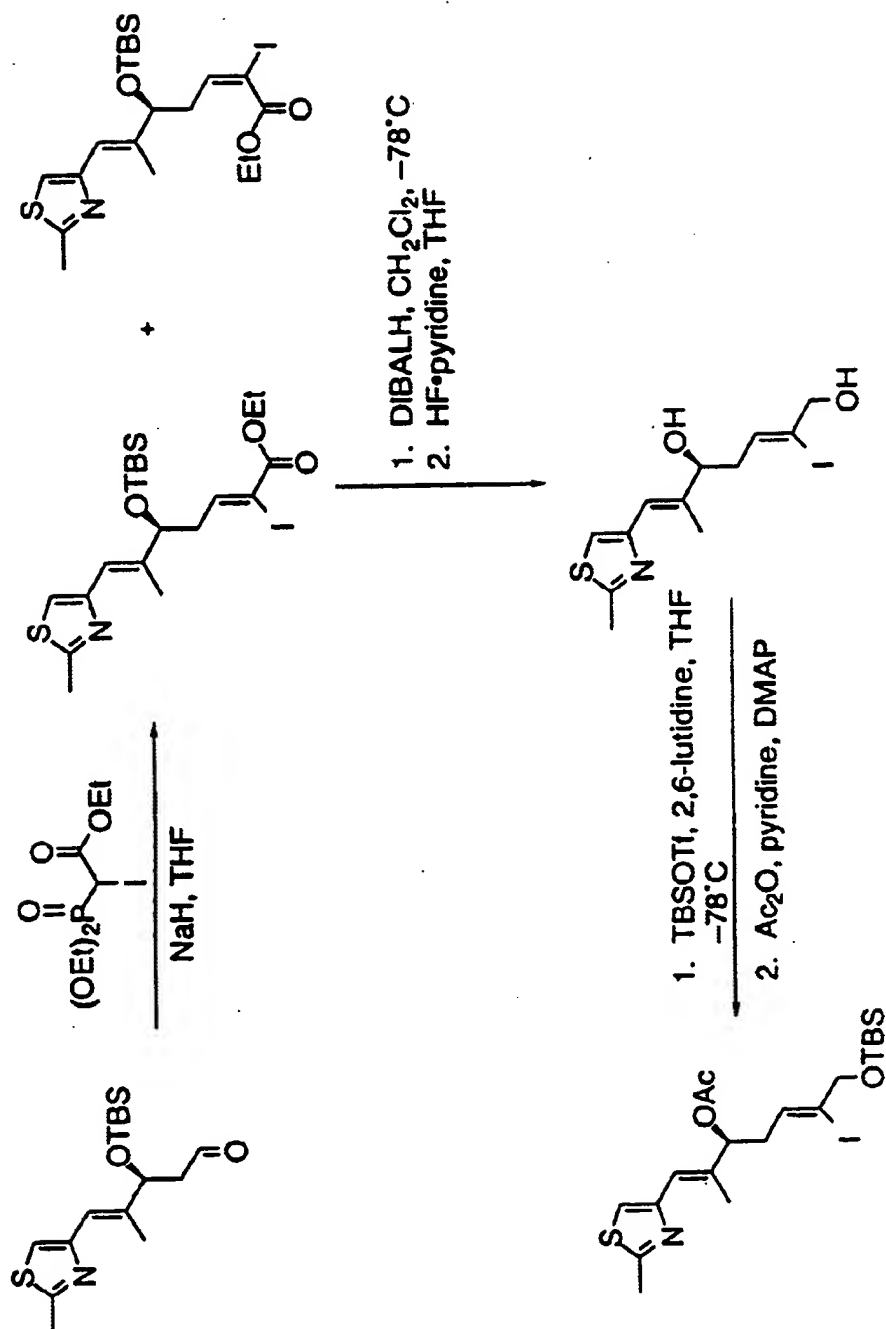
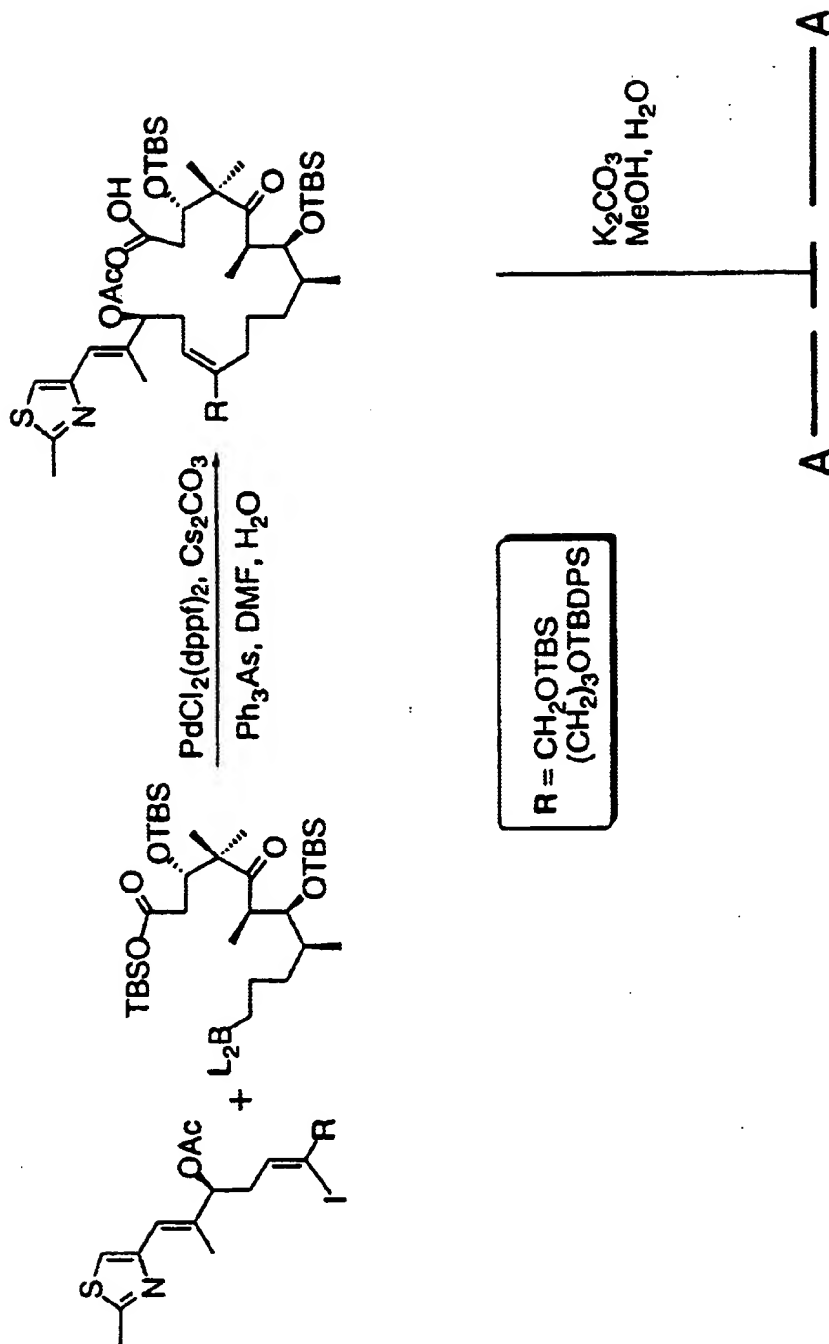


FIG. 3C



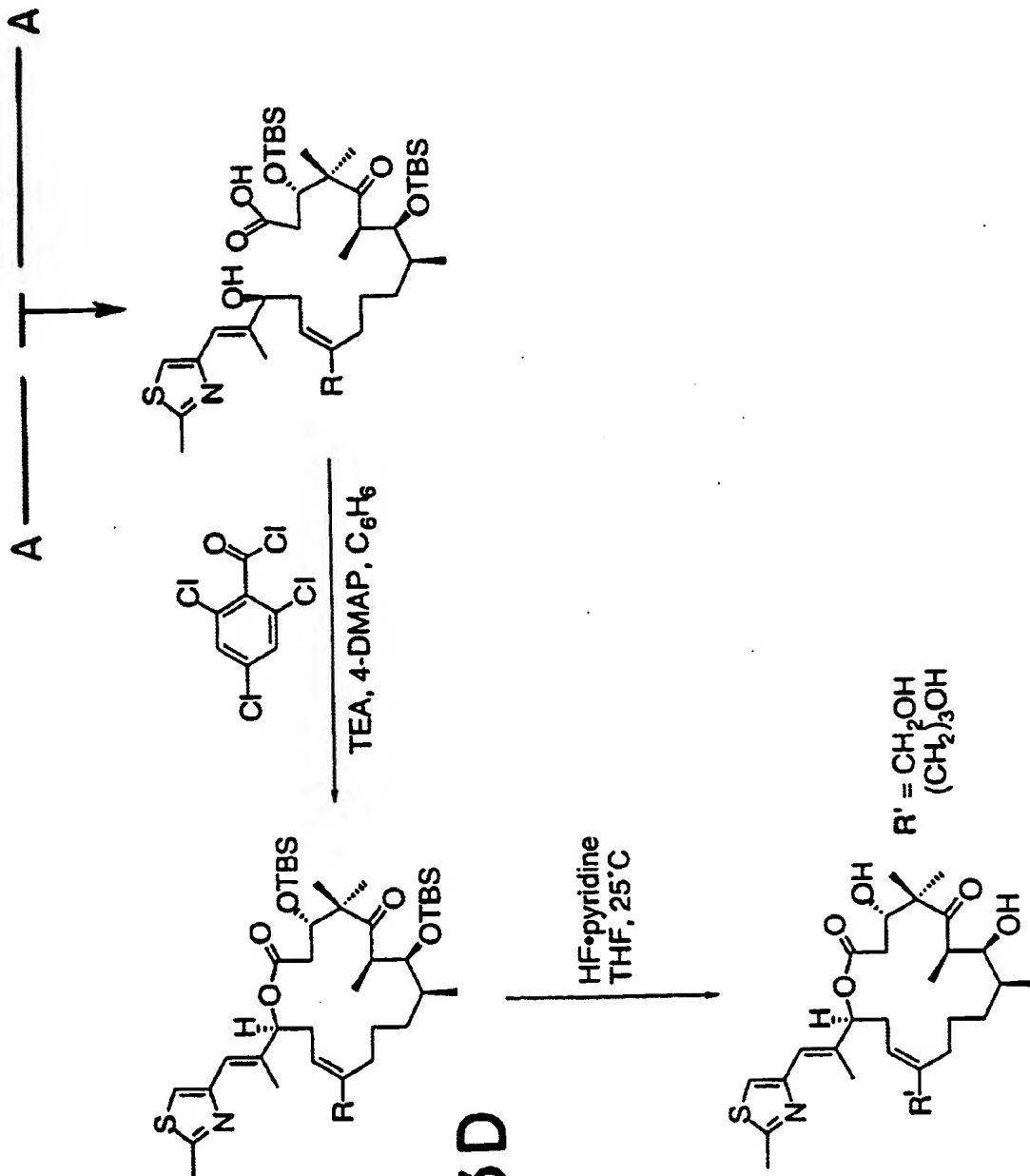


FIG. 3D

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FIG. 3E

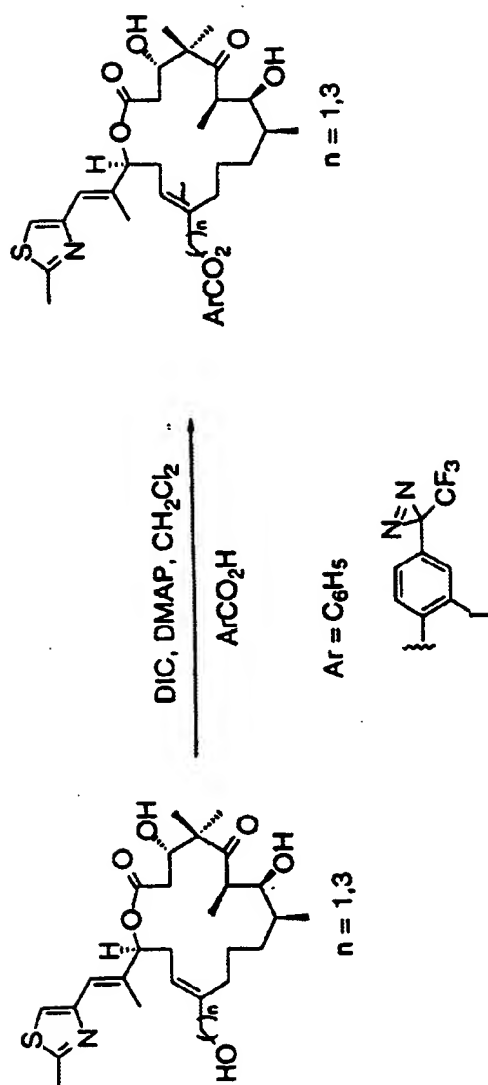
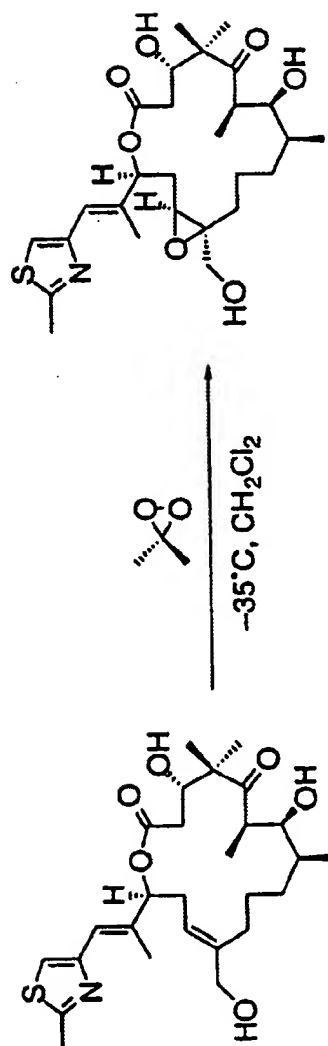


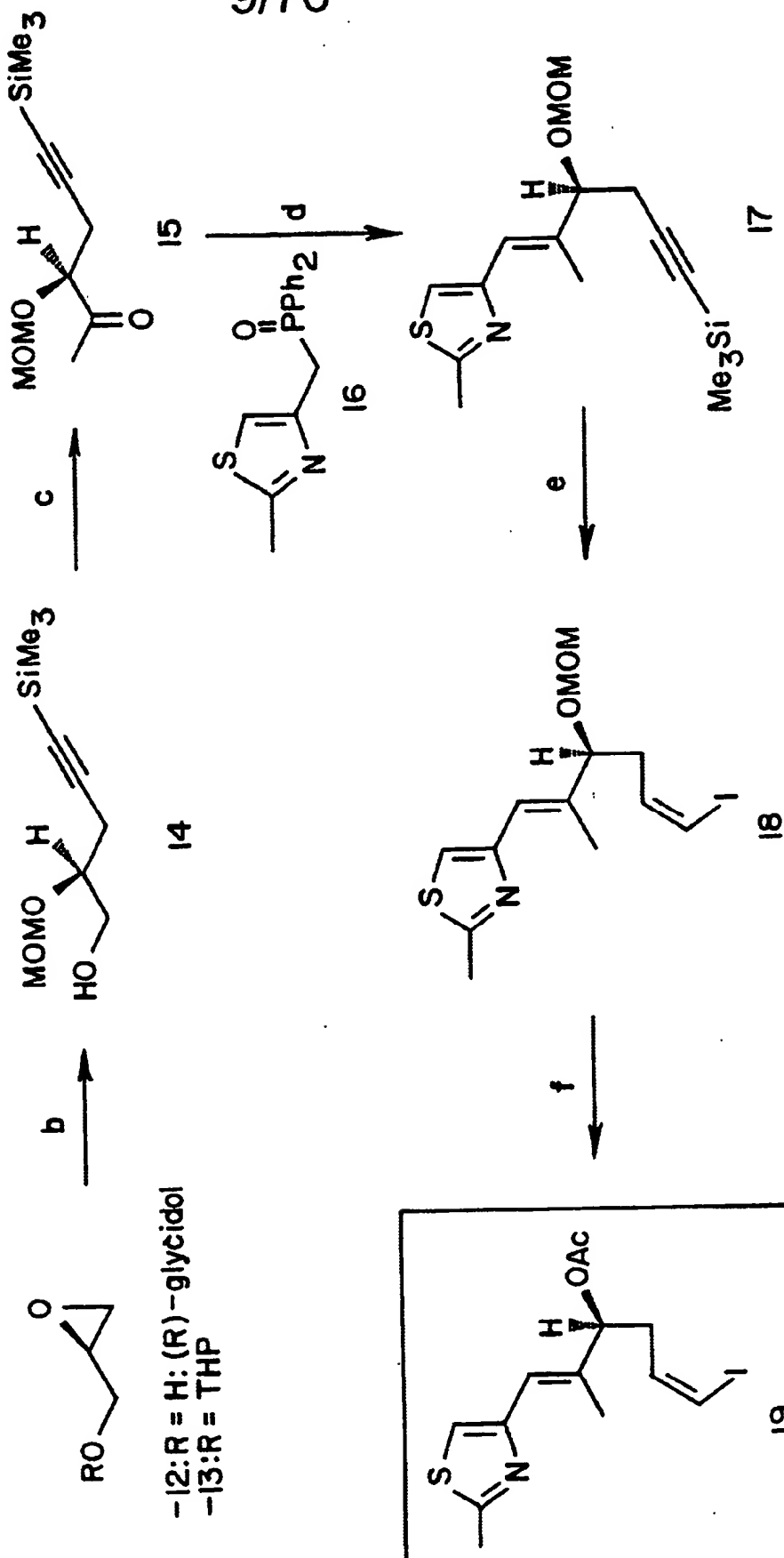
FIG. 3F





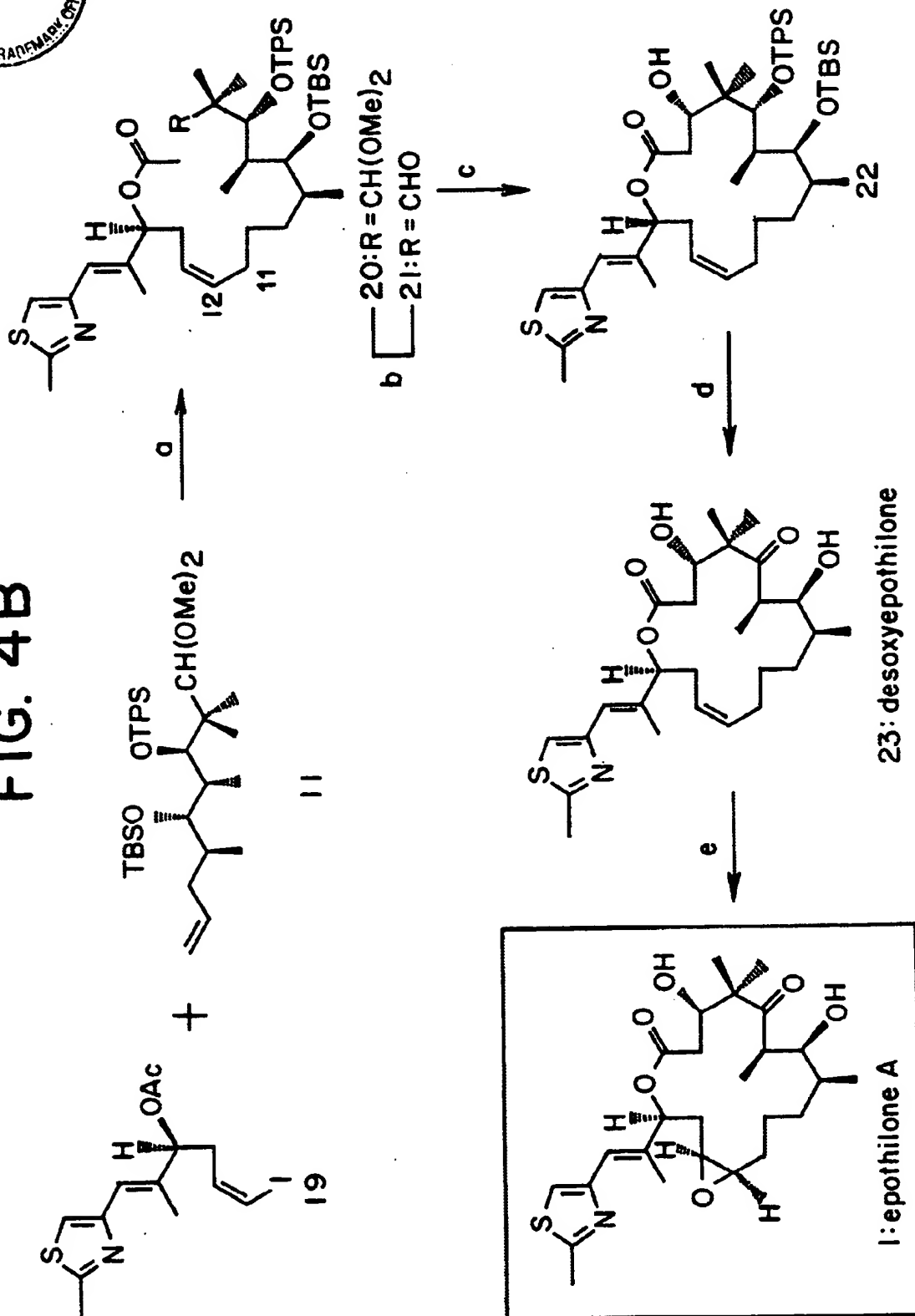
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FIG. 4A



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FIG. 4B



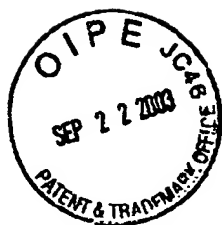
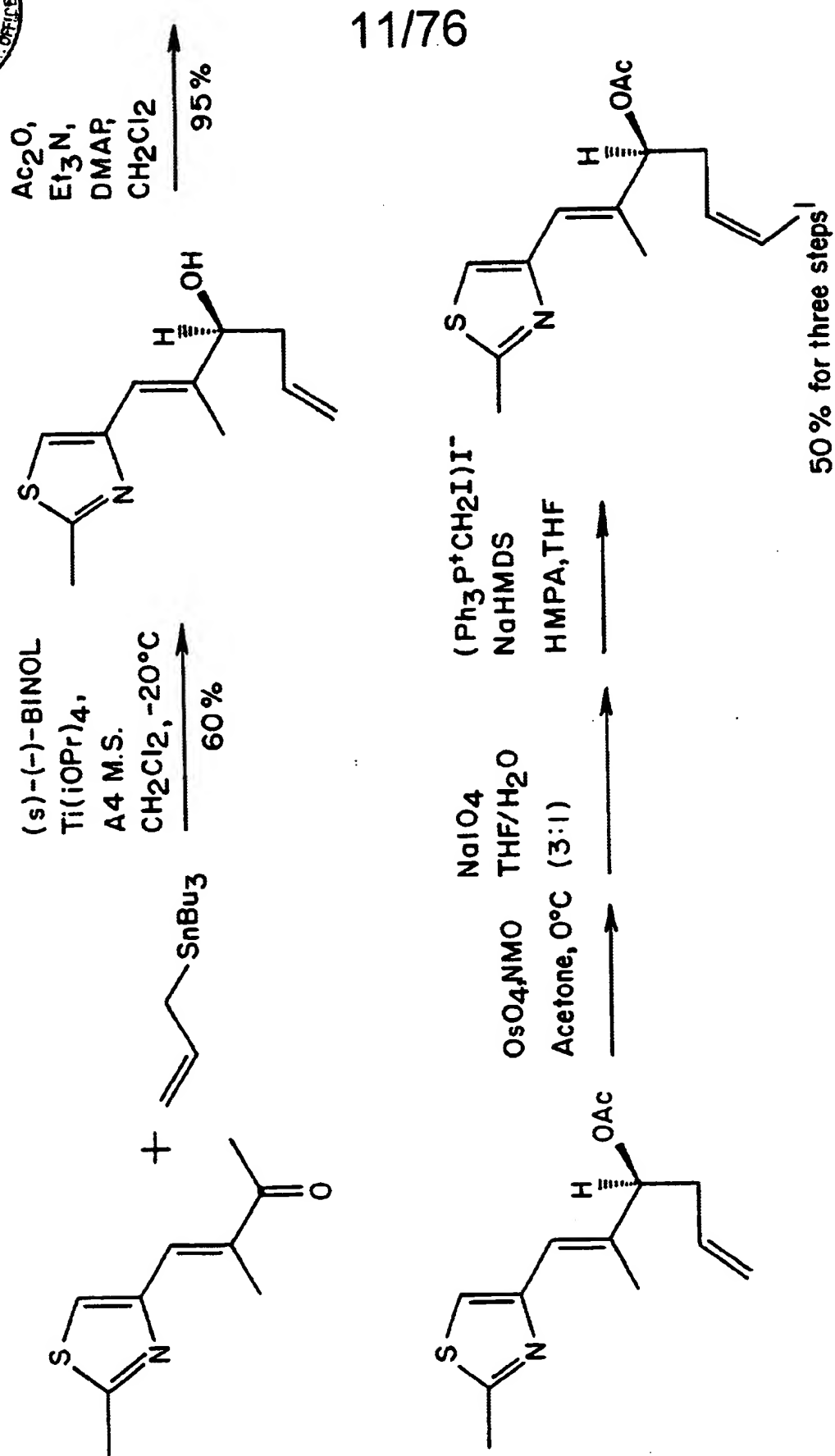


FIG. 5



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FIG. 6A

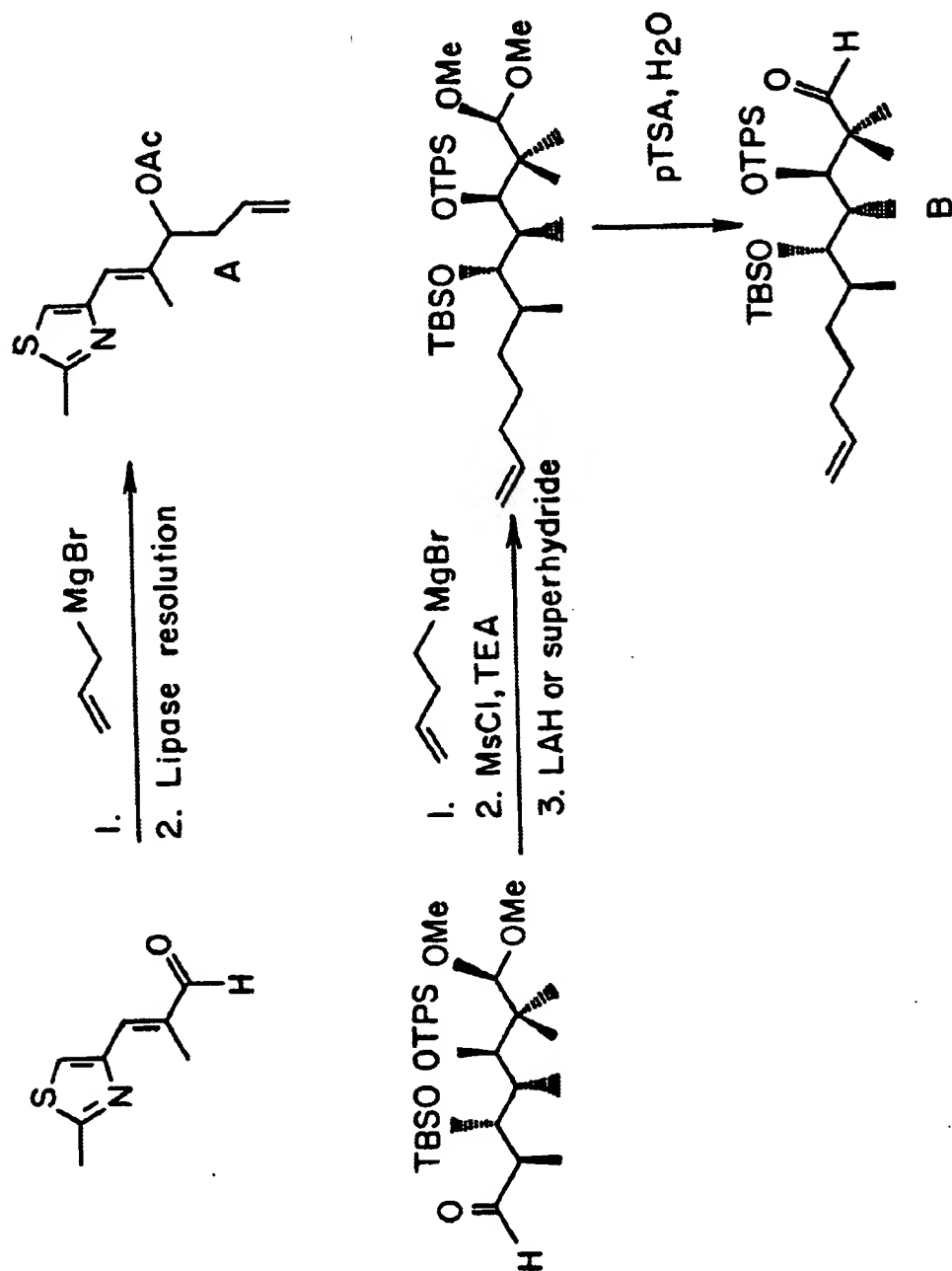
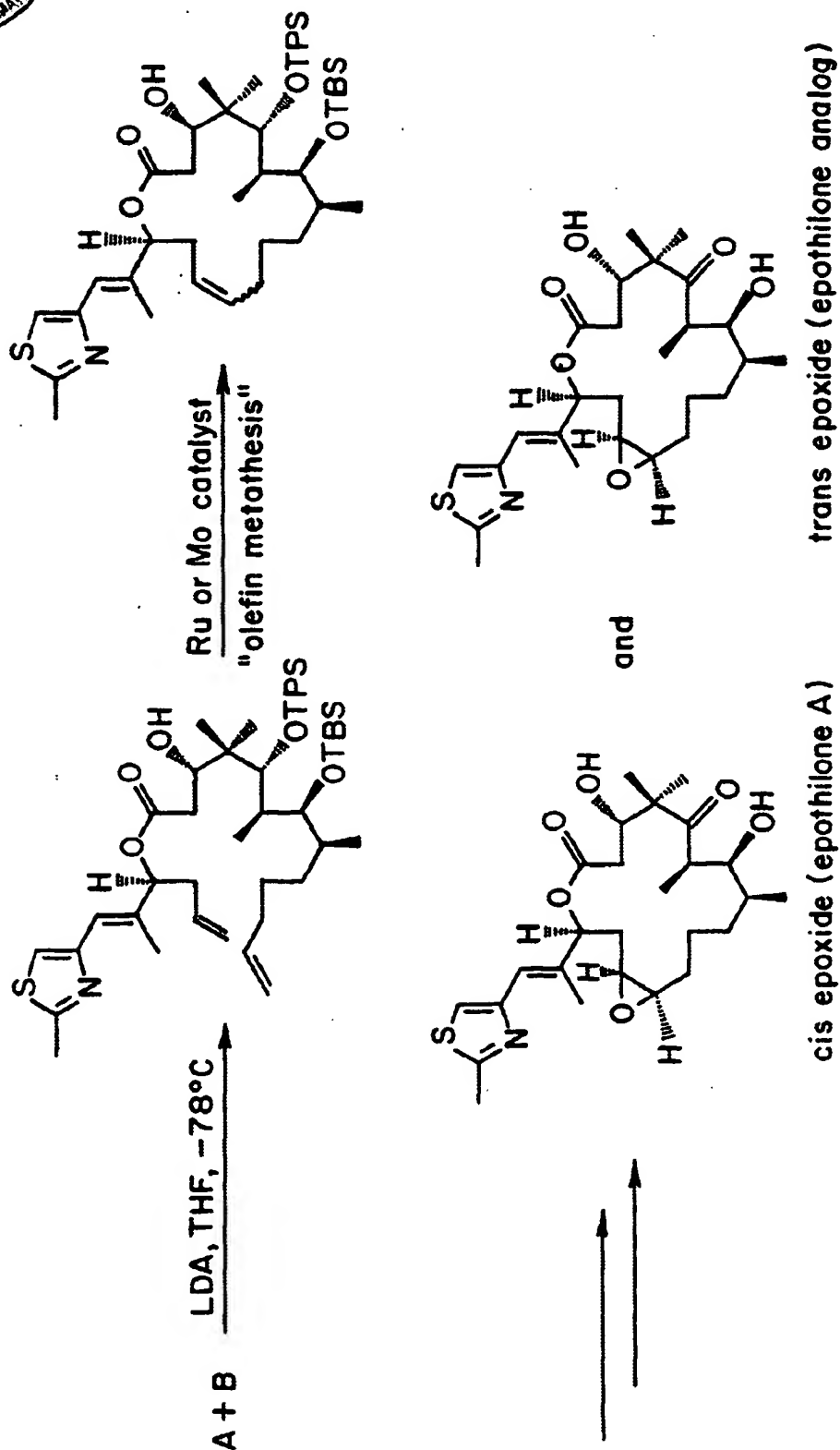
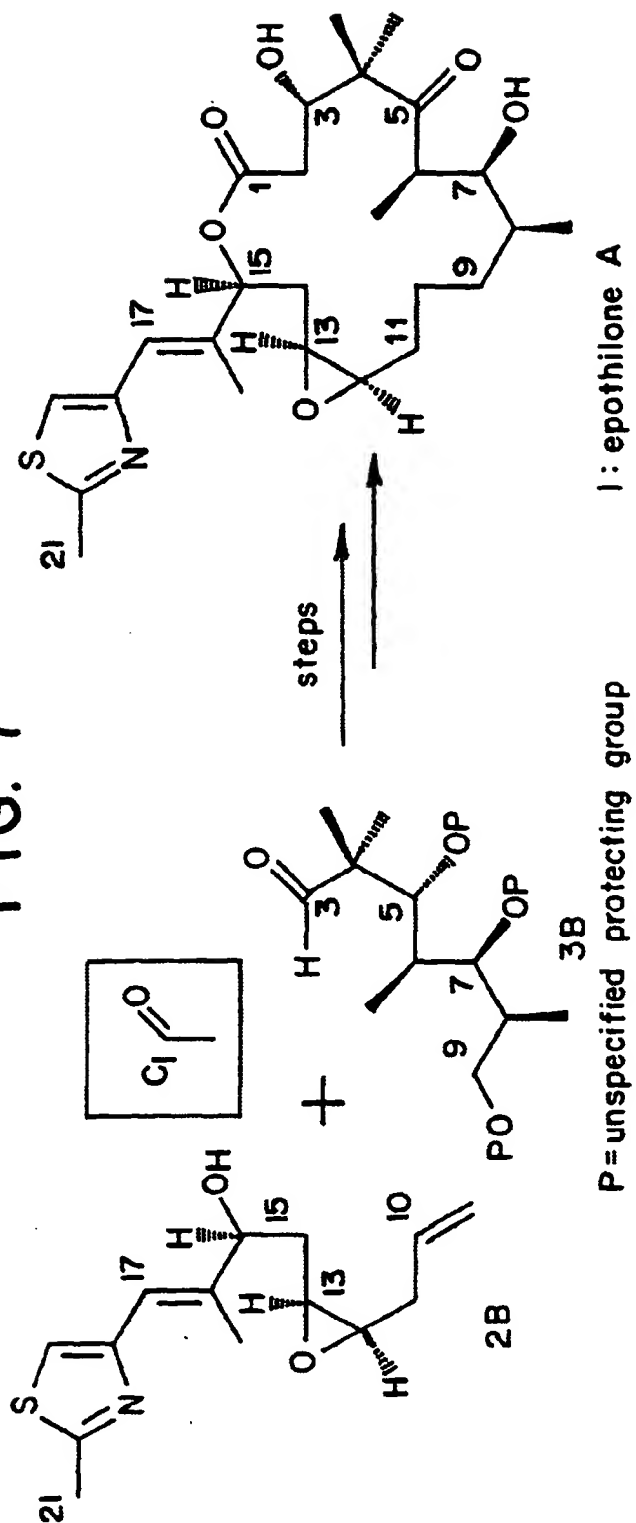


FIG. 6B

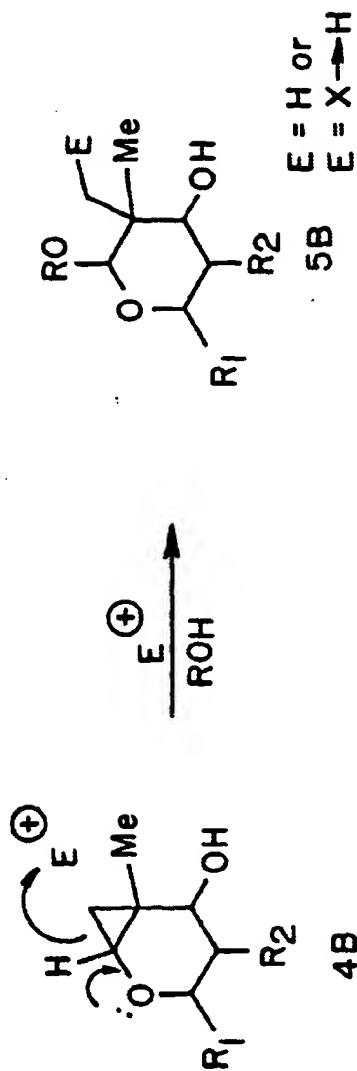


\*17 steps from known starting materials vs. 27 steps for aldol macrocyclization

FIG. 7



Convergent strategy for a total synthesis of epothilone A (1).



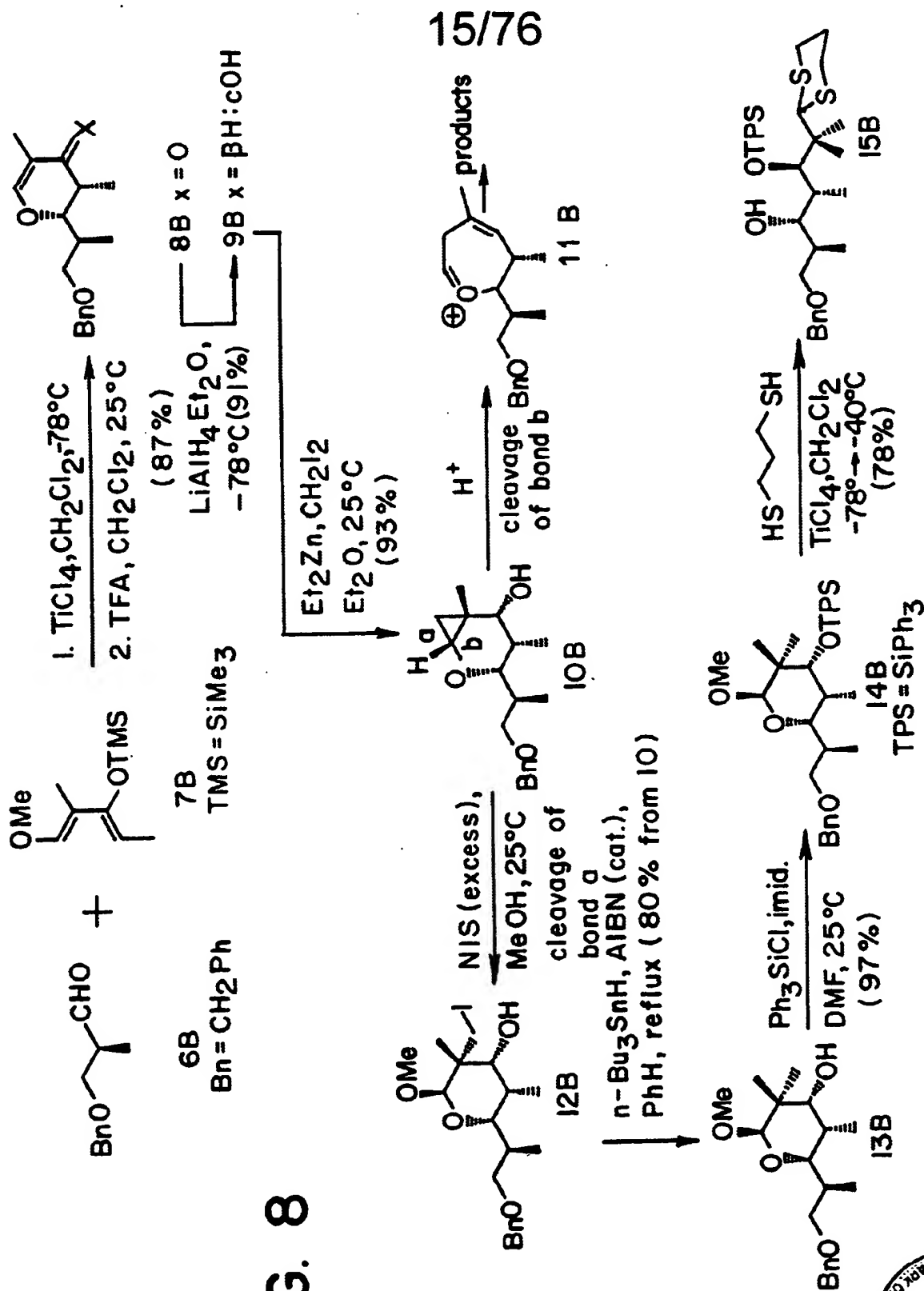
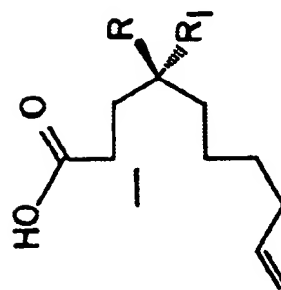
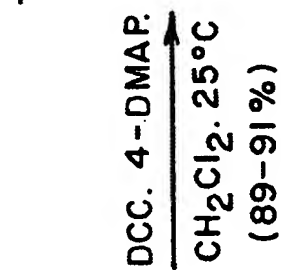
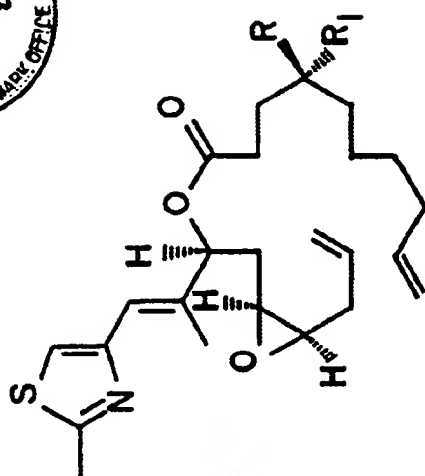


FIG. 8



FIG. 9



16B: R, R<sub>1</sub> = H

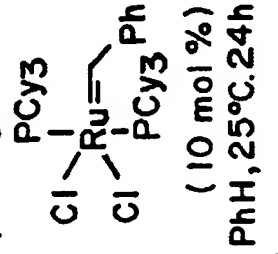
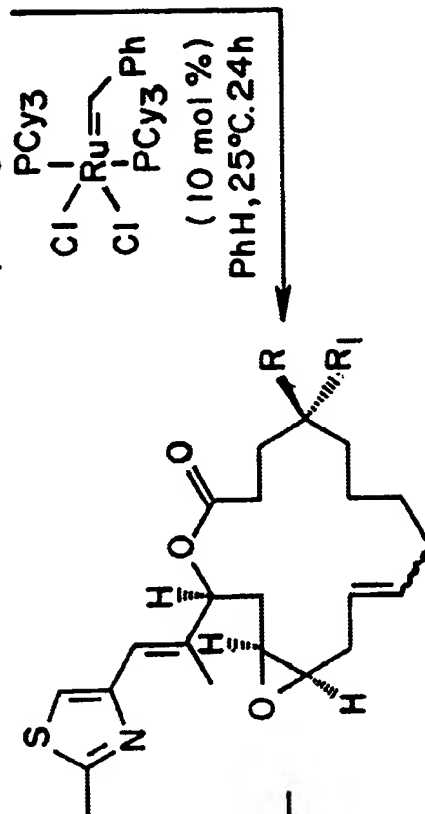
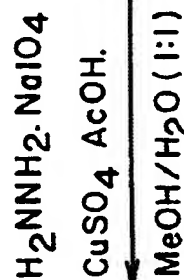
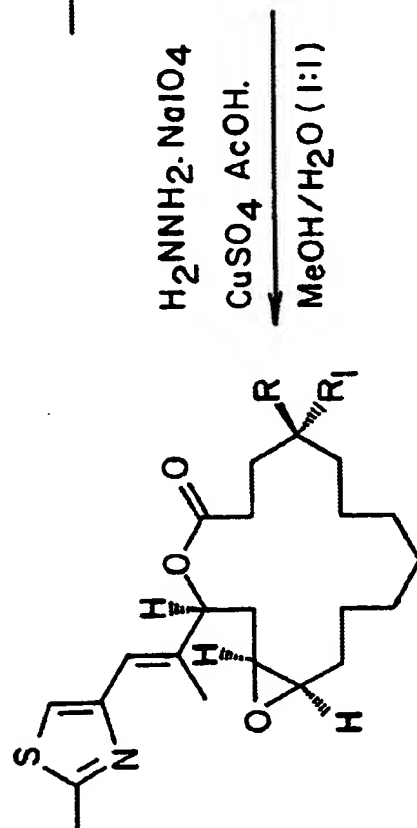
17B: R, R<sub>1</sub> = CH<sub>3</sub>

2B

18B: R, R<sub>1</sub> = H

19B: R, R<sub>1</sub> = CH<sub>3</sub>

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22B: R, R<sub>1</sub> = H

20B: R, R<sub>1</sub> = H (E:Z ca. 1:1, 45%)

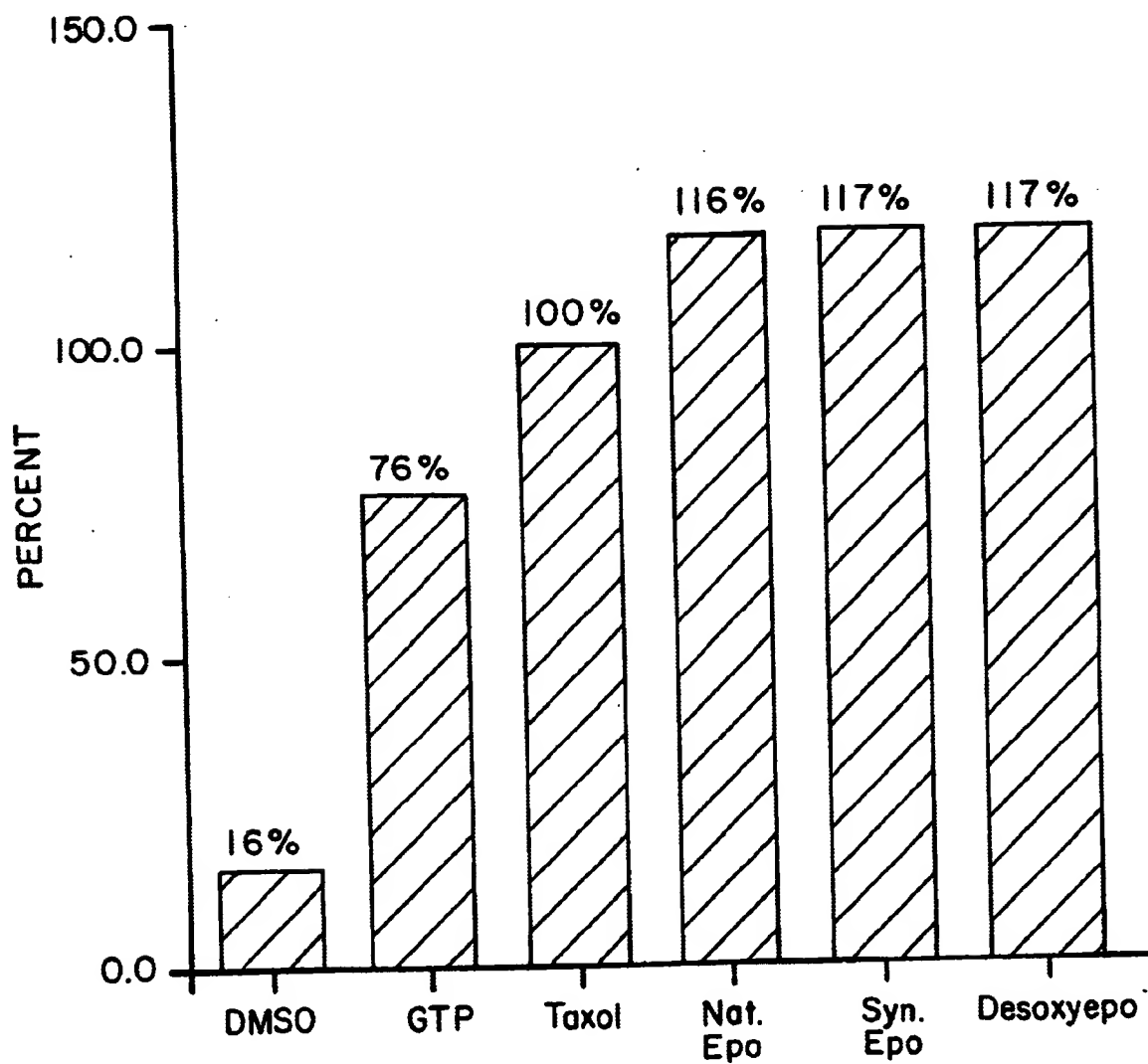
21B: R, R<sub>1</sub> = CH (one stereoisomer, 70%)





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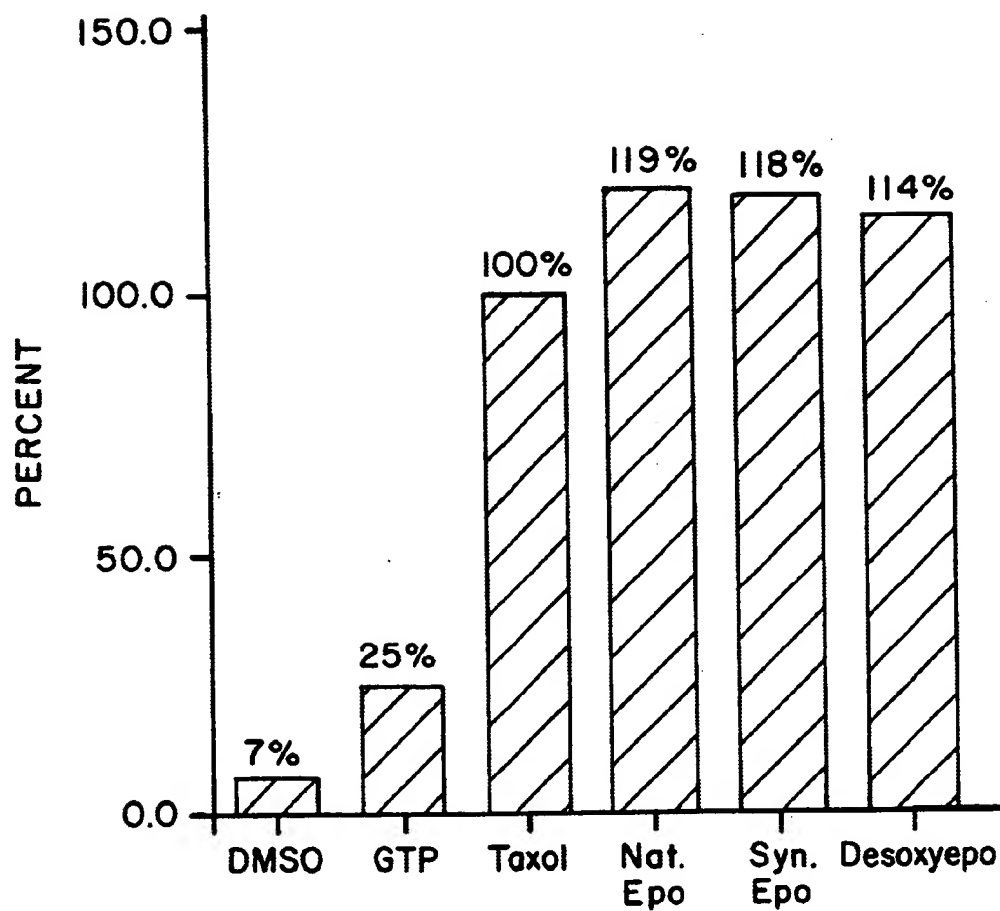
FIG. 10





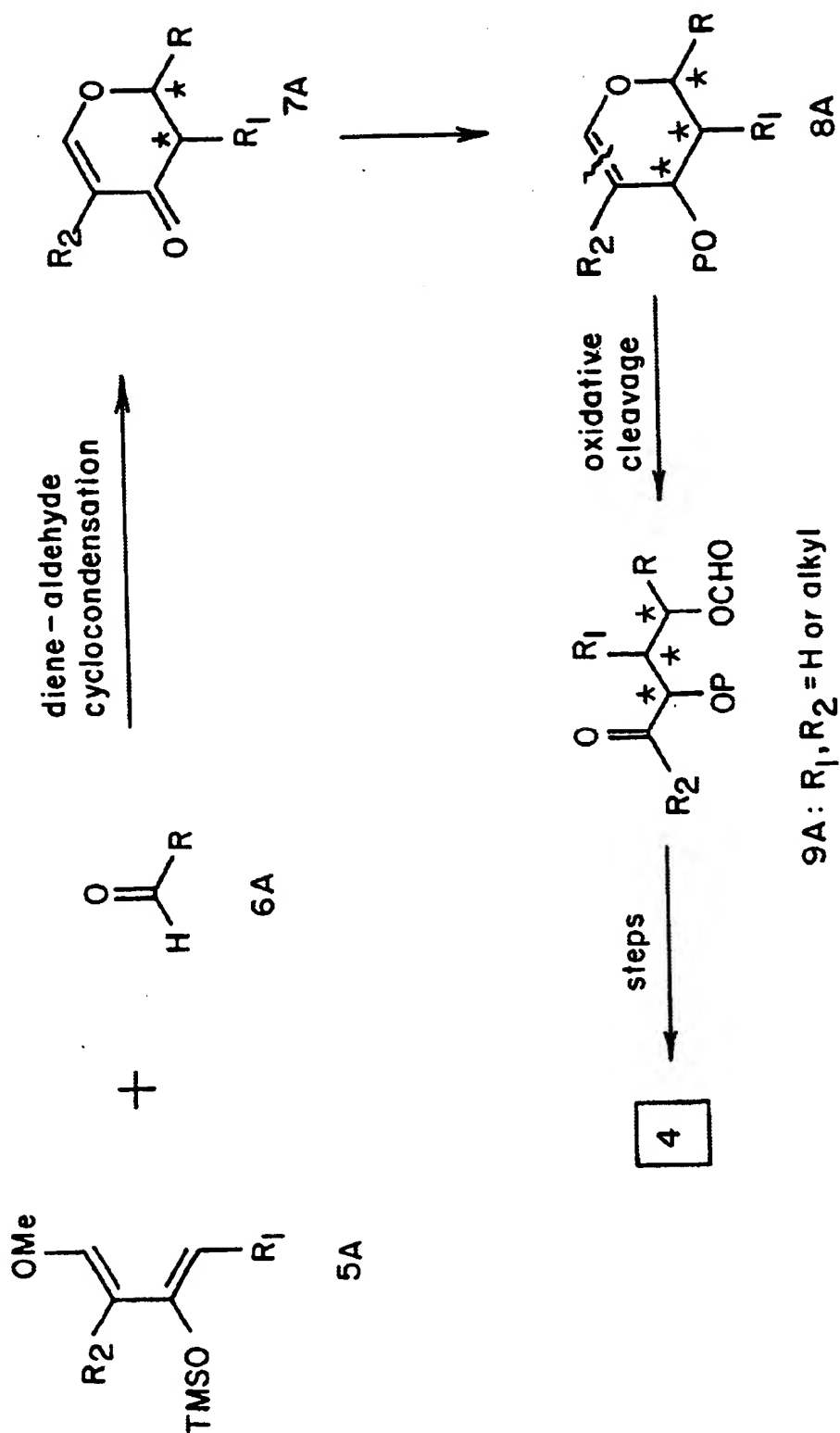
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FIG. II



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FIG. 13



**FIG. 14A**

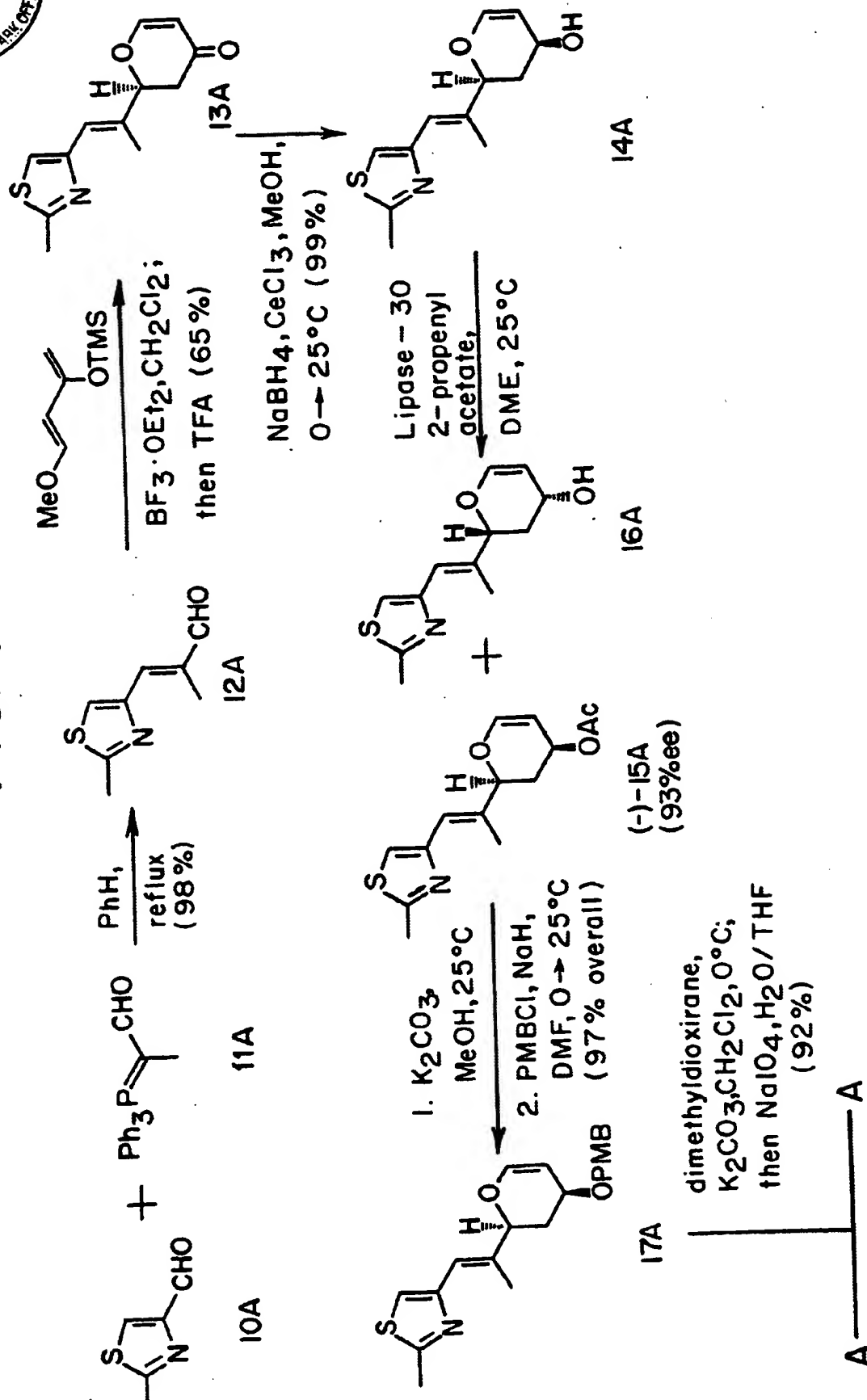


FIG. 14B

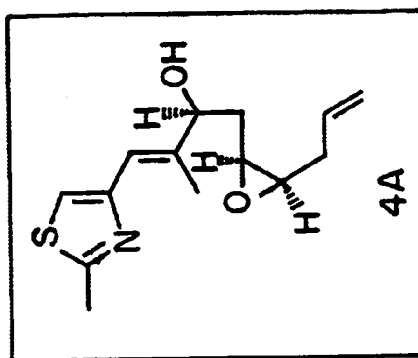
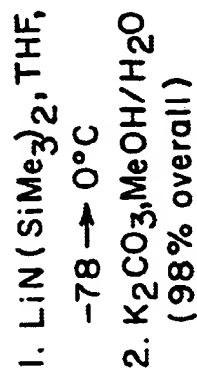
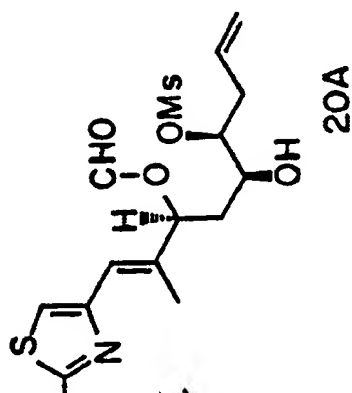
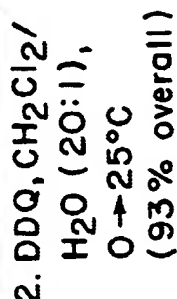
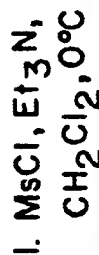
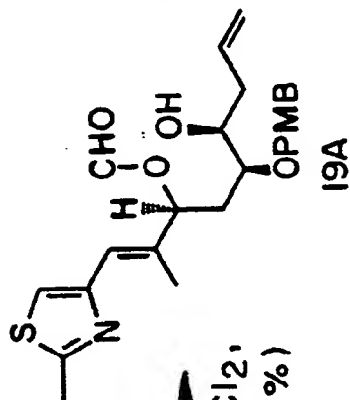
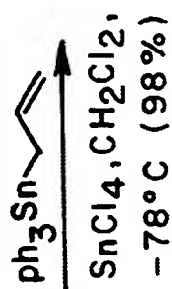
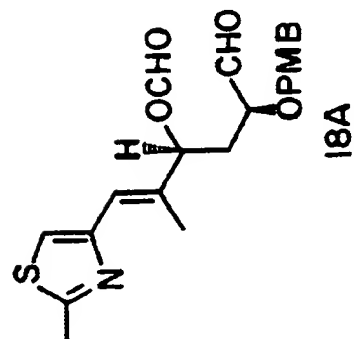
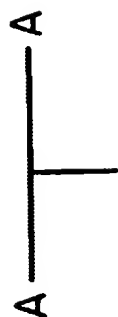


FIG. 15

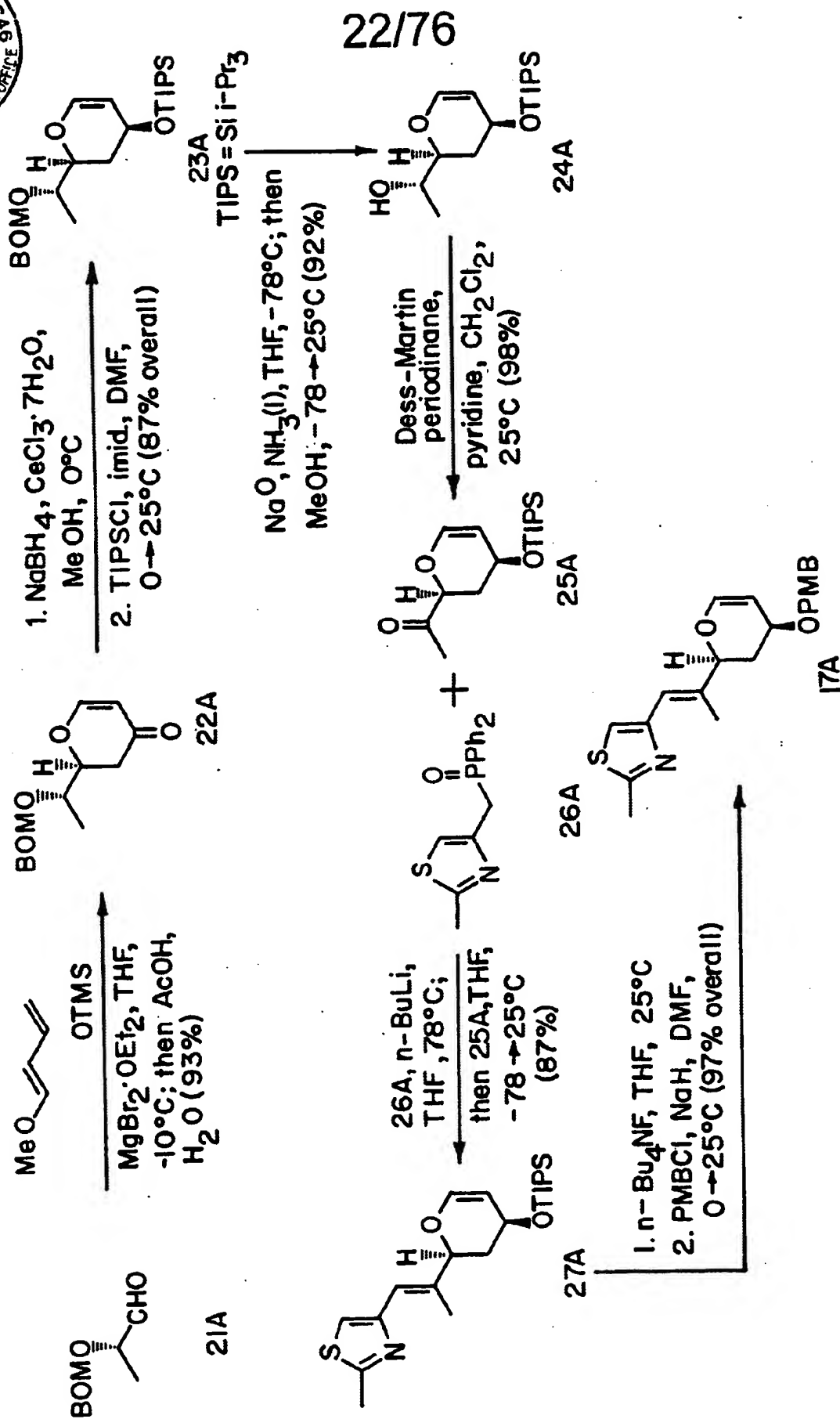


FIG. 16

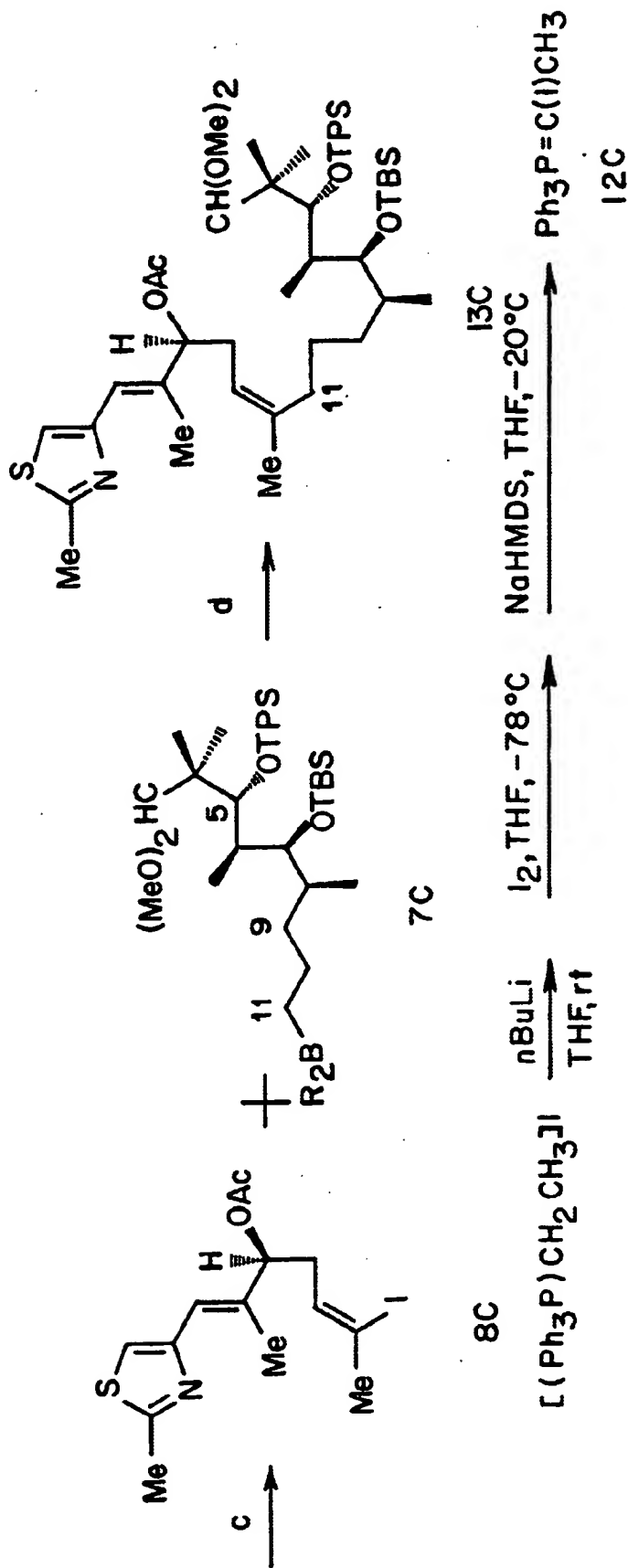
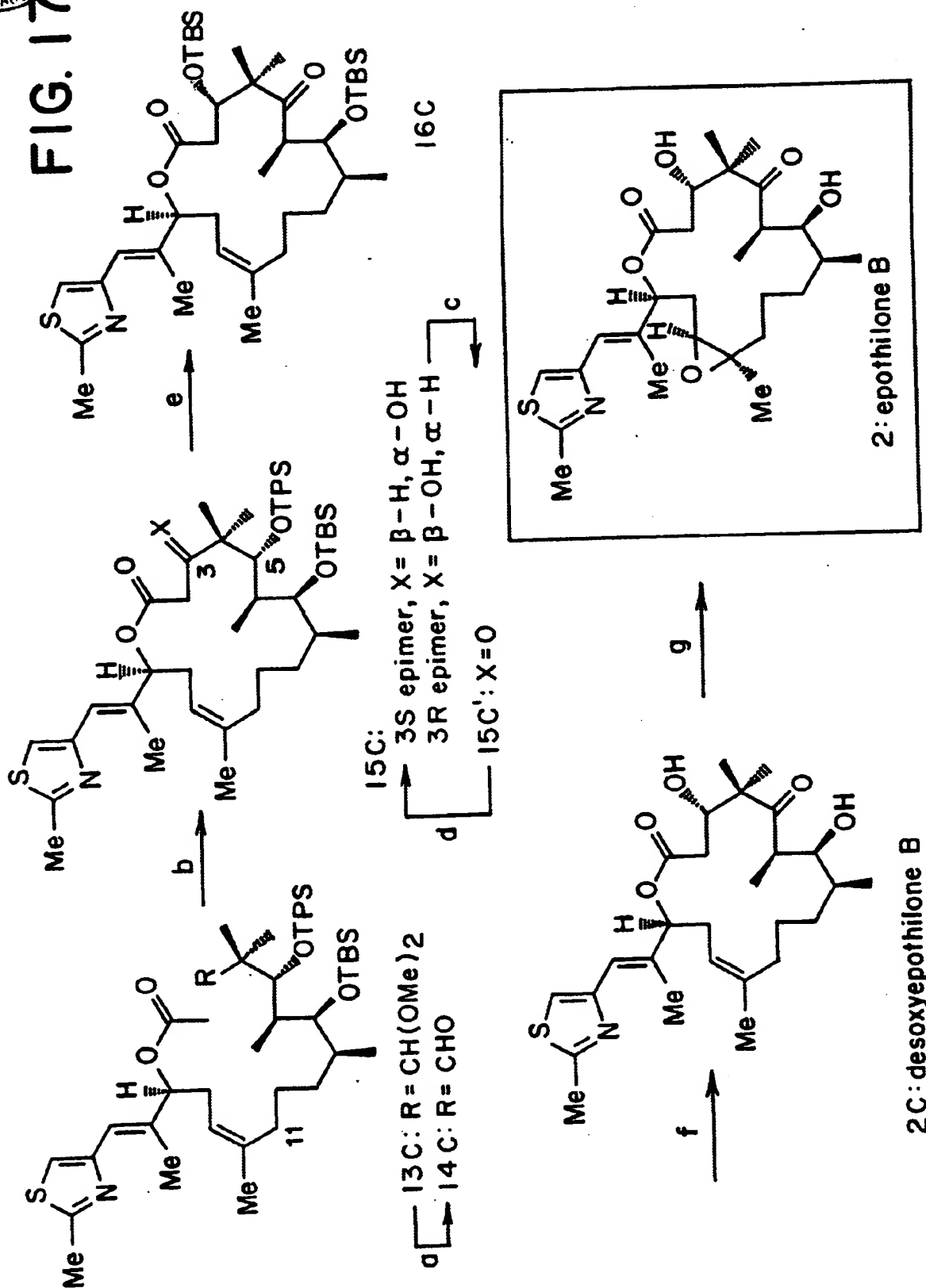


FIG. 17





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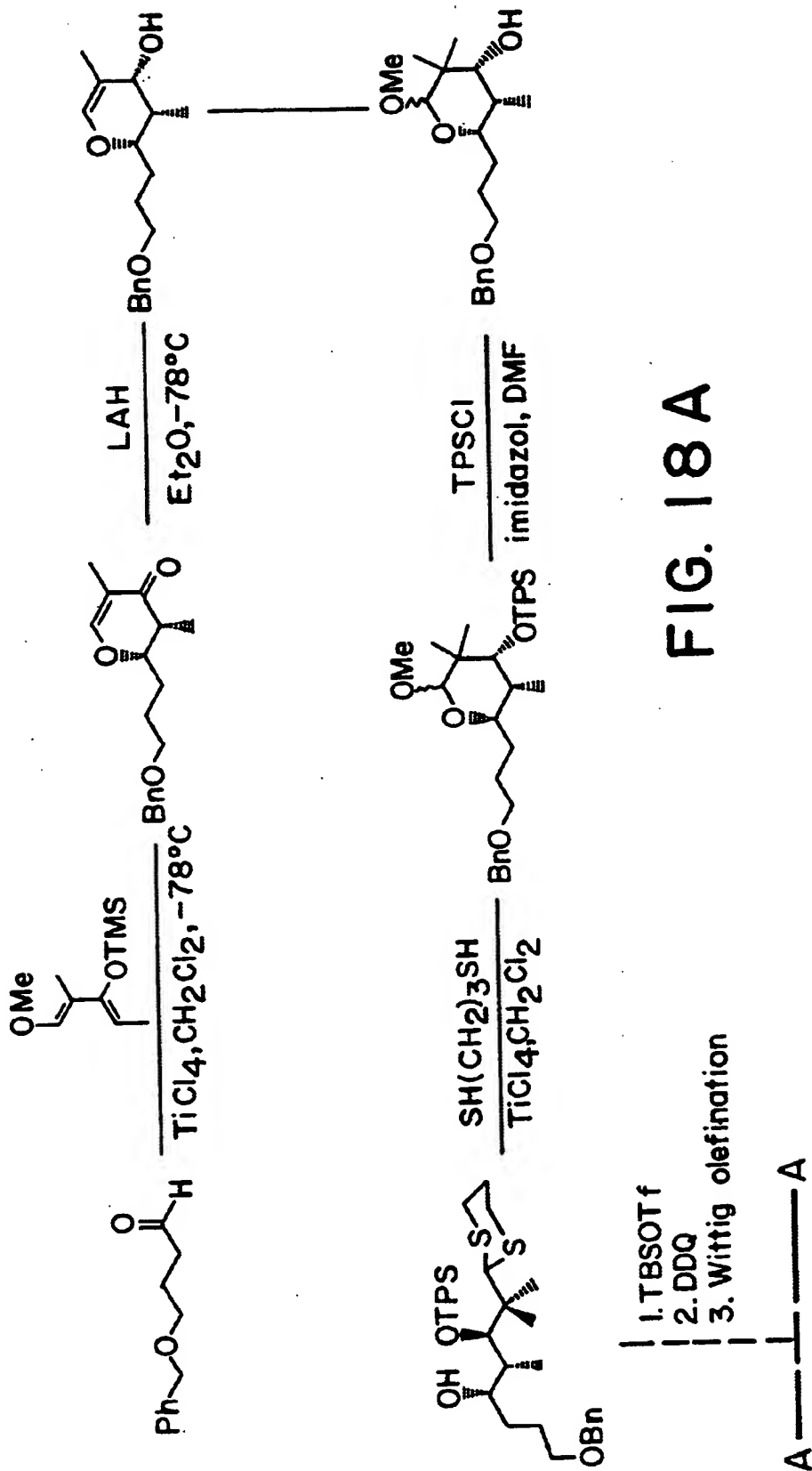
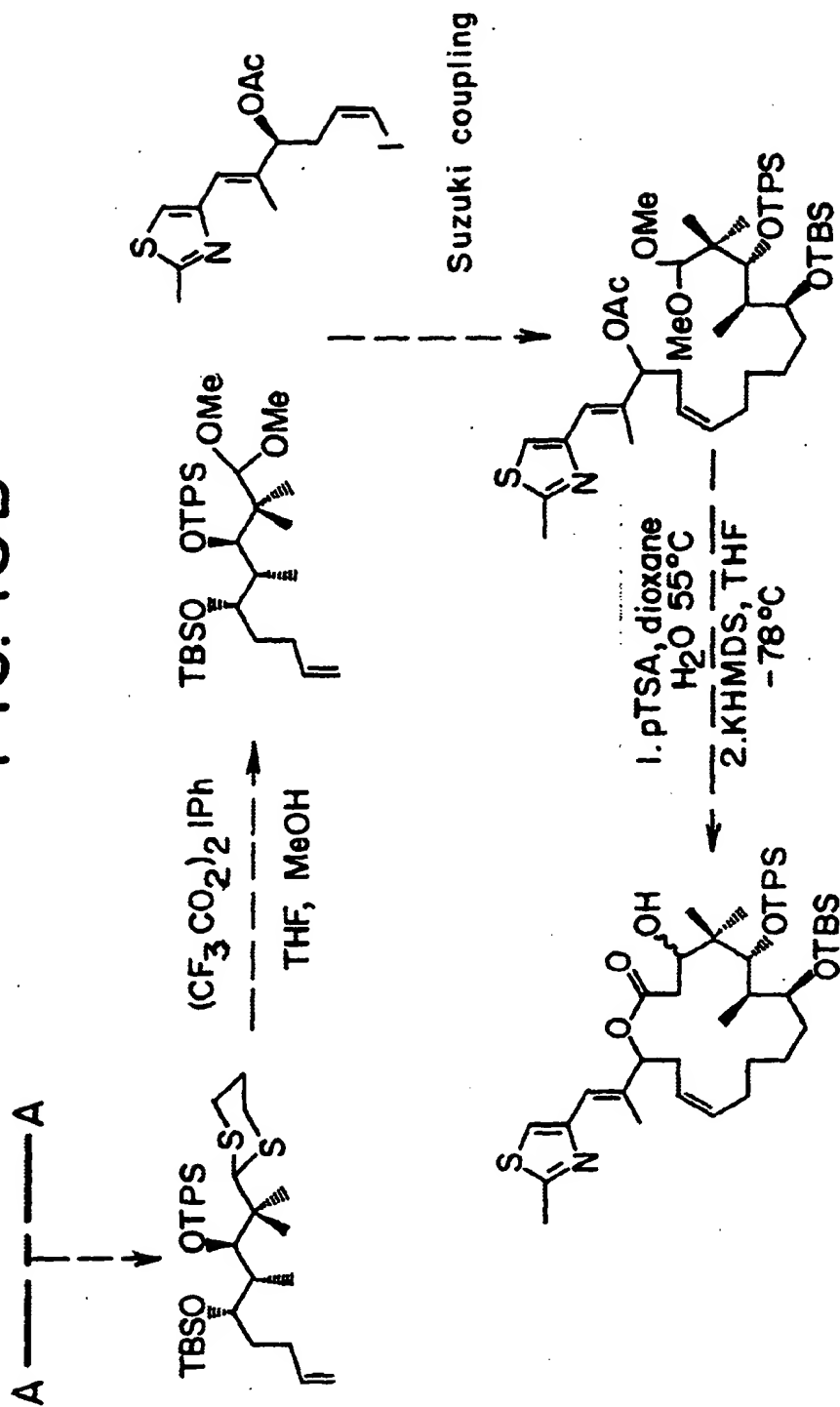


FIG. 18A

FIG. 18B



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FIG. 19A

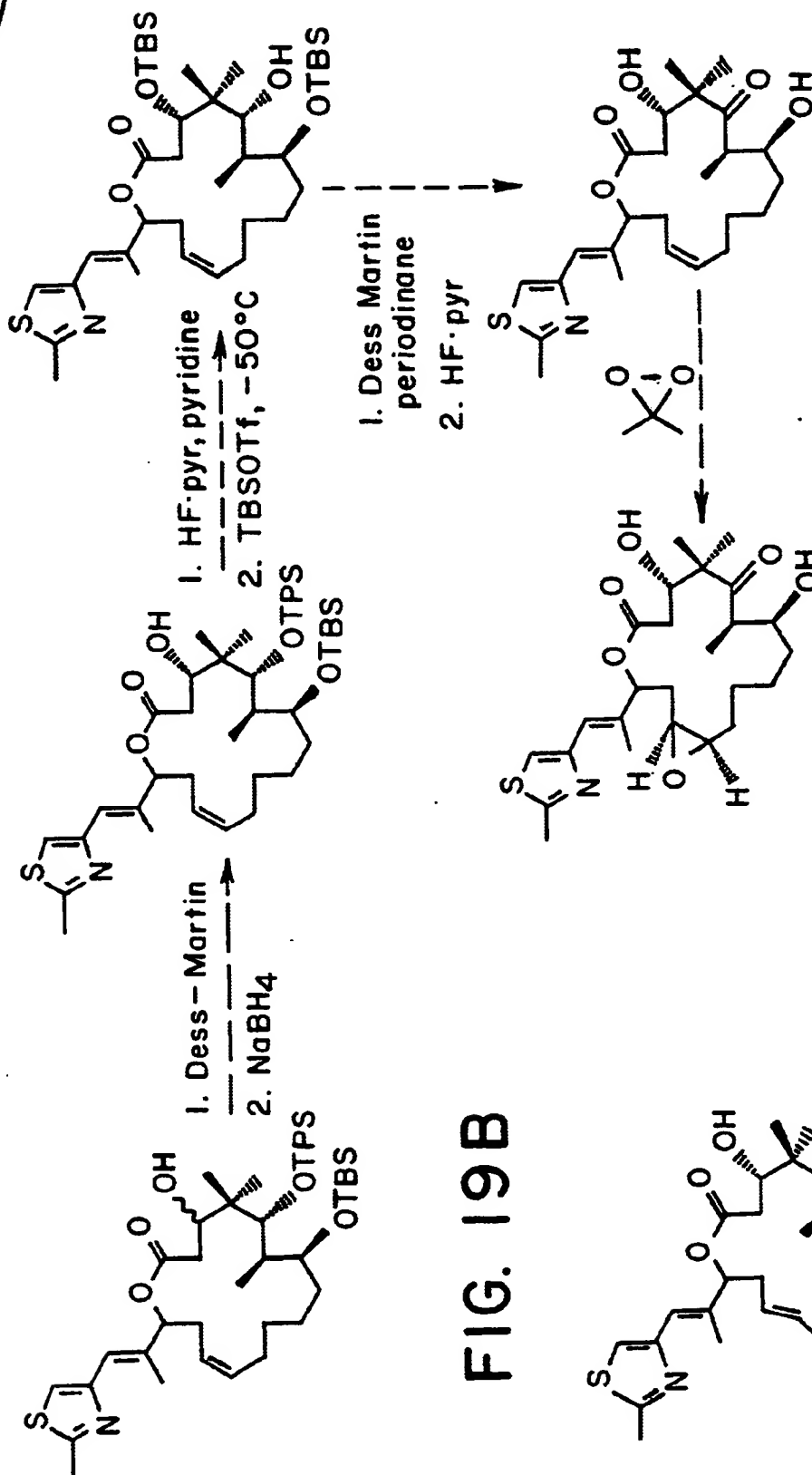


FIG. 19B

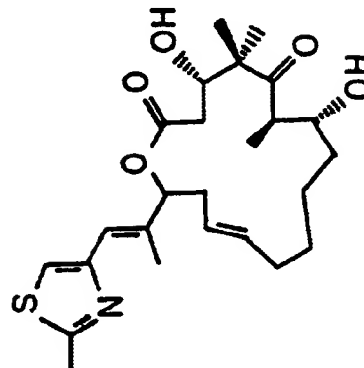


FIG. 19C

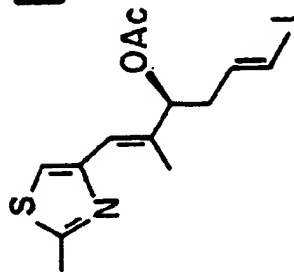
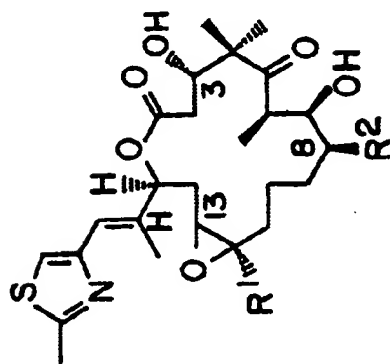


FIG. 20A



R<sup>1</sup> = H, R<sup>2</sup> = Me; epothilone A

R<sup>1</sup> = R<sup>2</sup> = Me; epothilone B

R<sup>1</sup> = R<sup>2</sup> = H; C<sub>8</sub> - desmethyl - epothilone A (3D)

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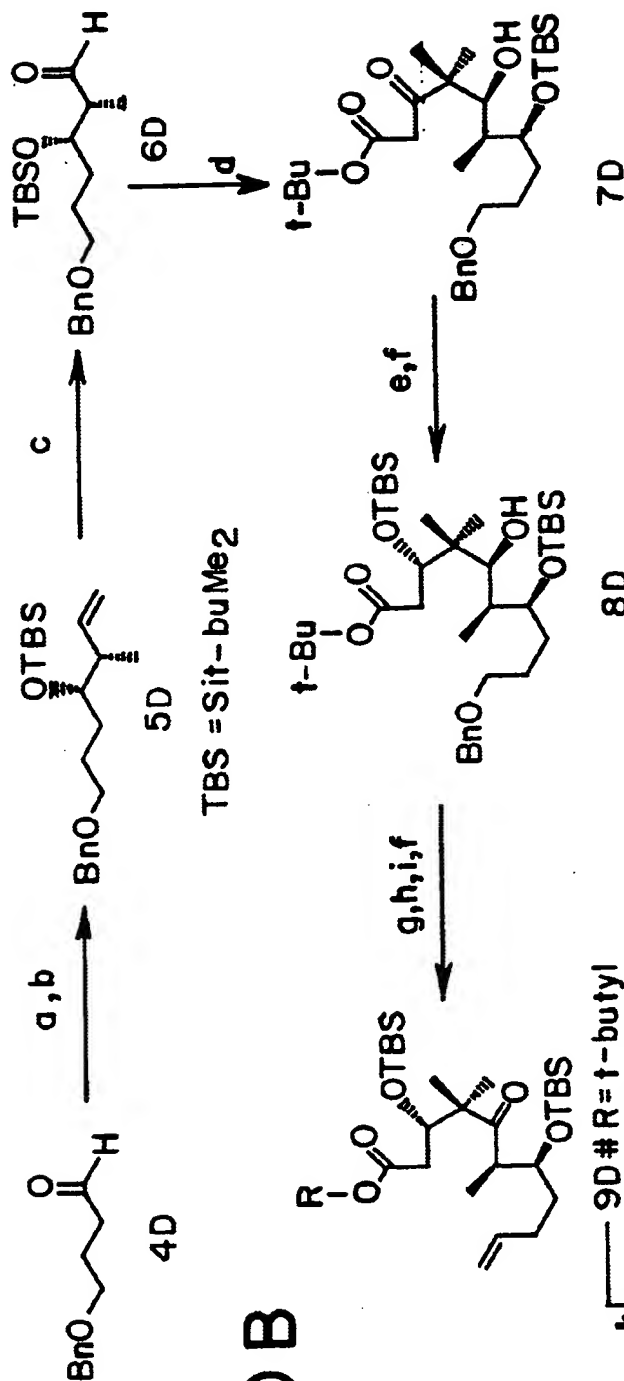
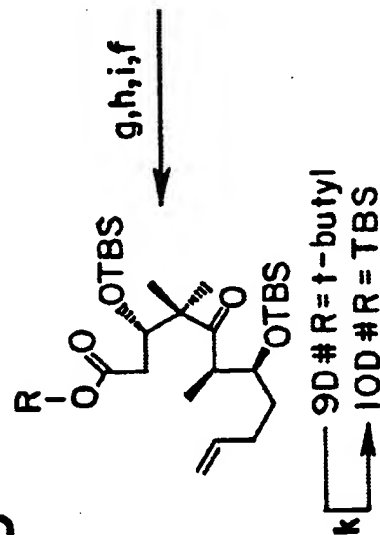


FIG. 20B

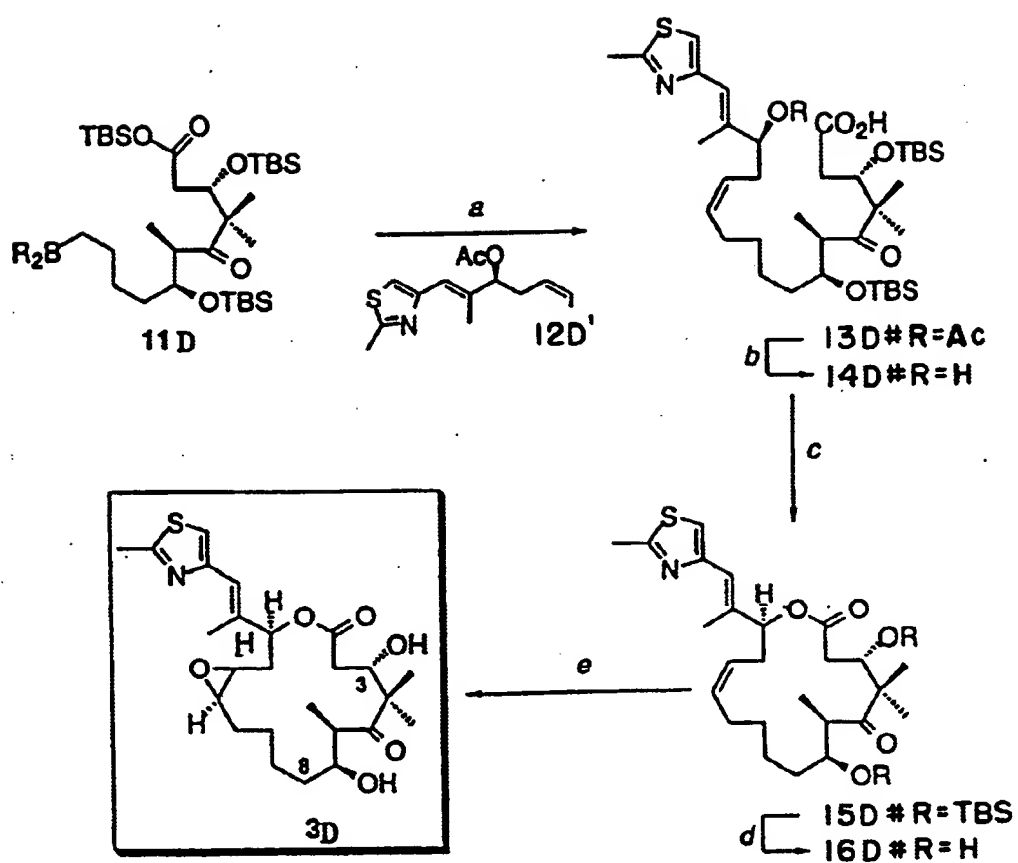


9D # R = t-butyl  
 10D # R = TBS

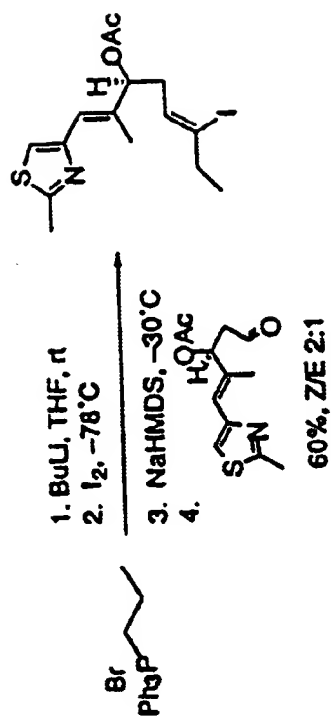
TBS = Sit-buMe<sub>2</sub>

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FIG. 21



**FIG. 22A**



**FIG. 22B**

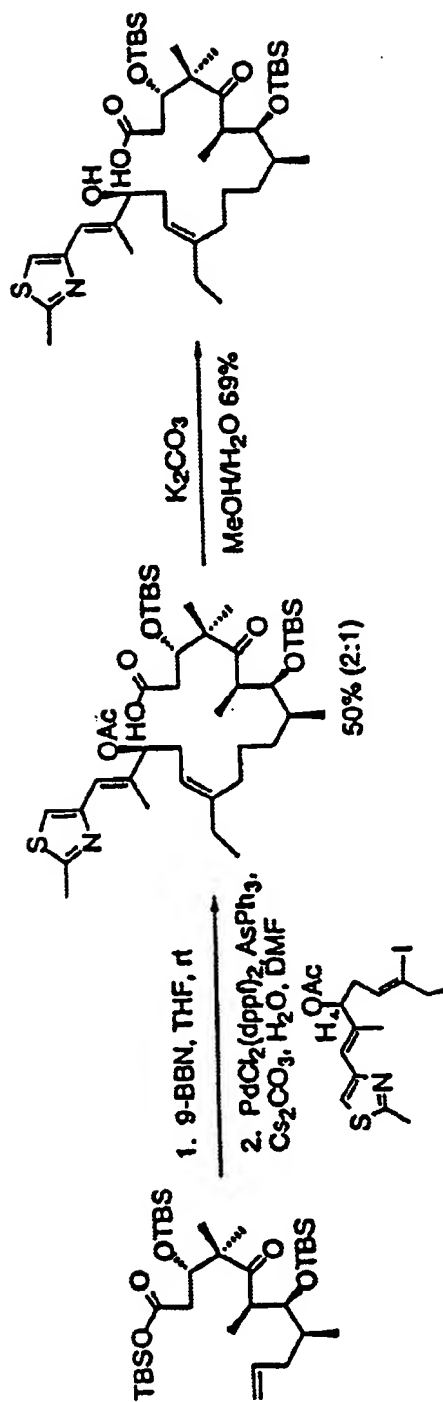


FIG. 22C

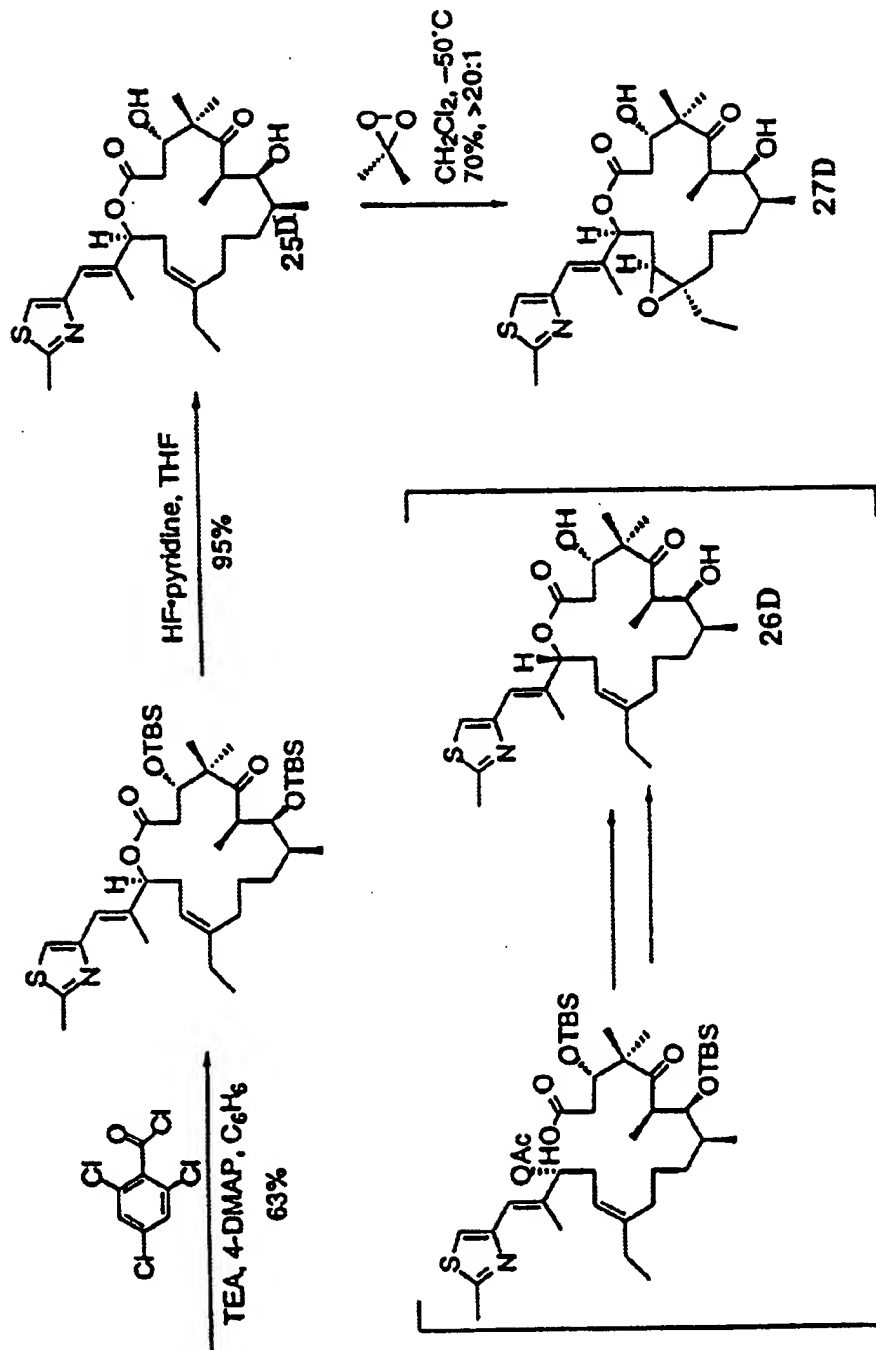


FIG. 23A

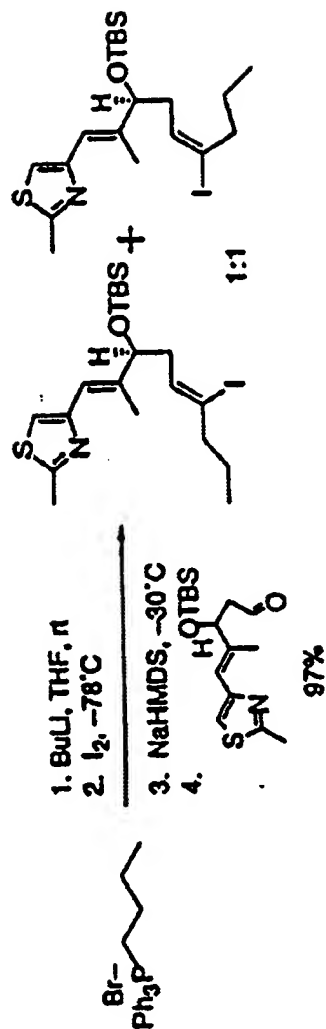


FIG. 23B

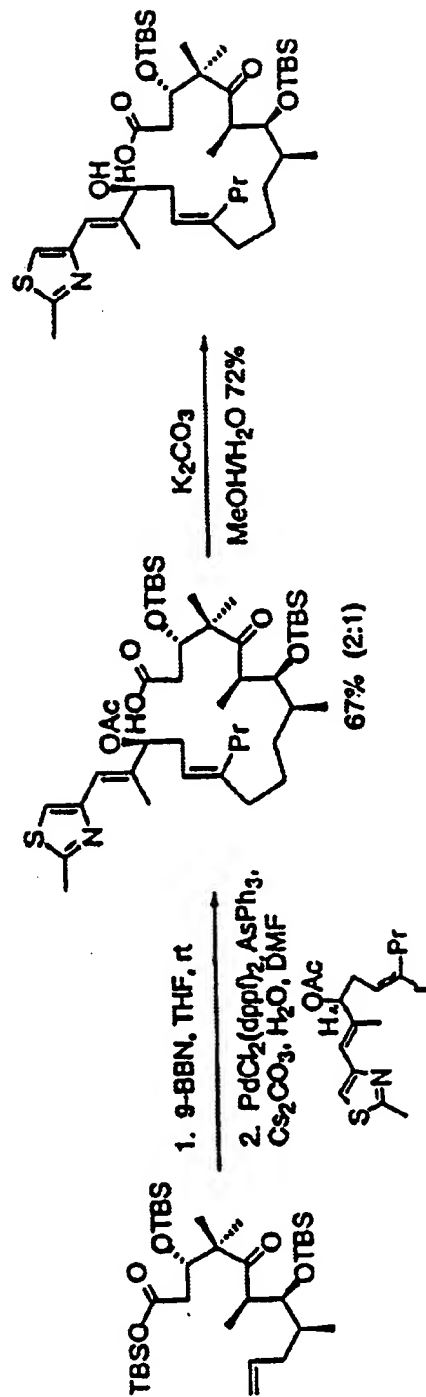




FIG. 23C

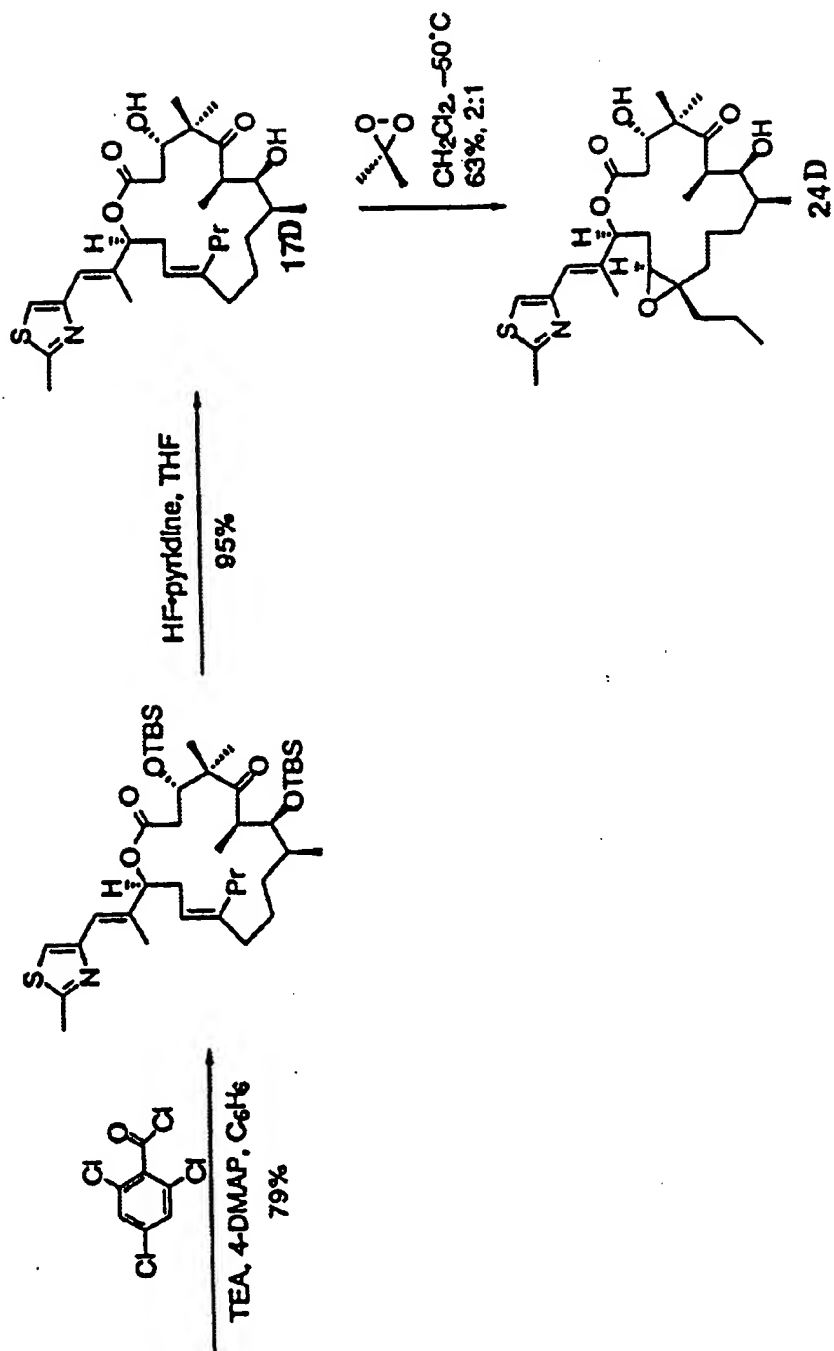


FIG. 24A

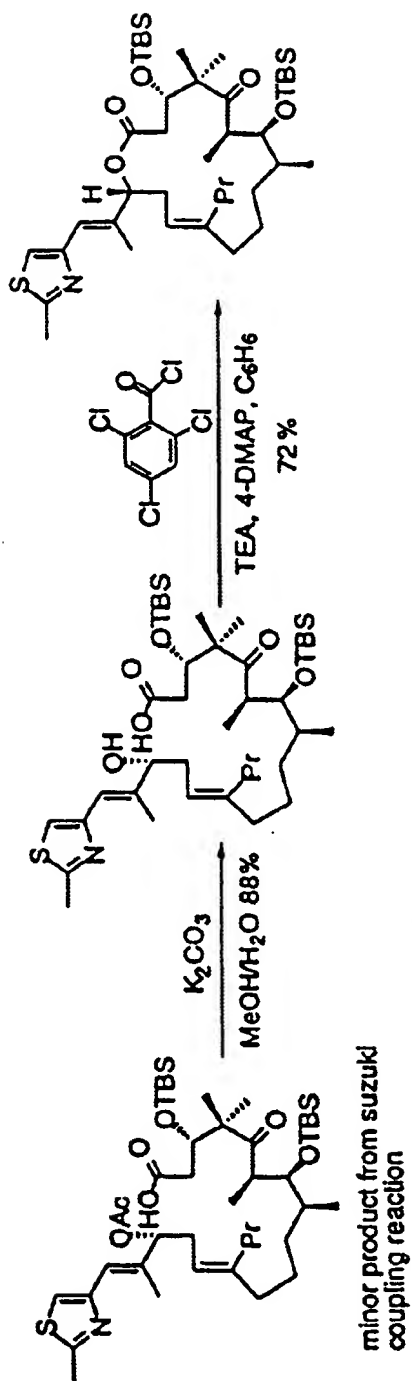


FIG. 24B

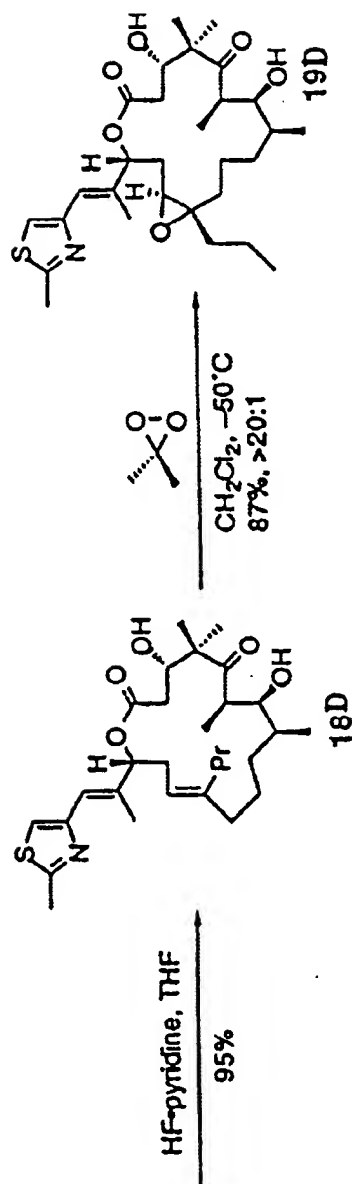


FIG. 25A

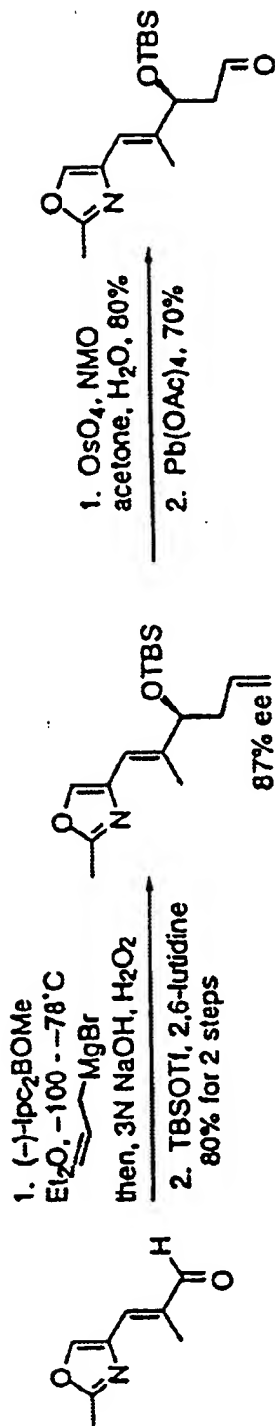


FIG. 25B

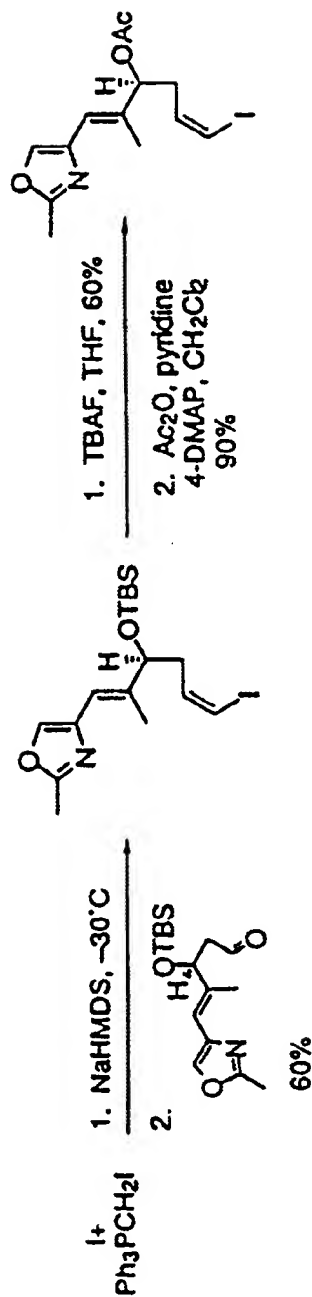


FIG. 25C

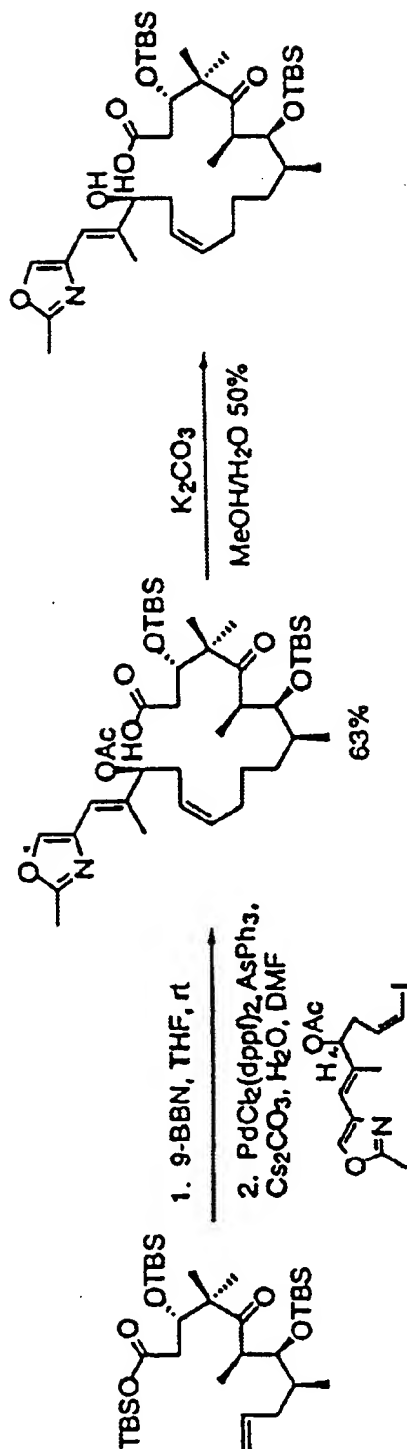


FIG. 25D

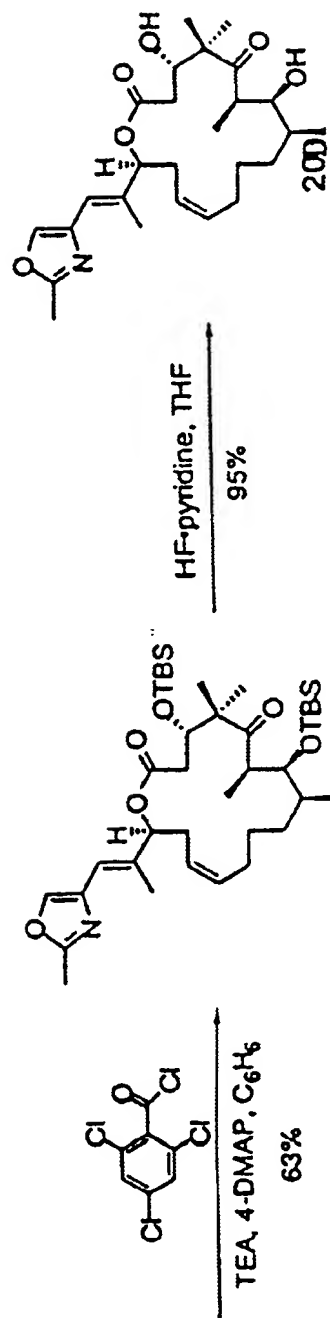


FIG. 26A

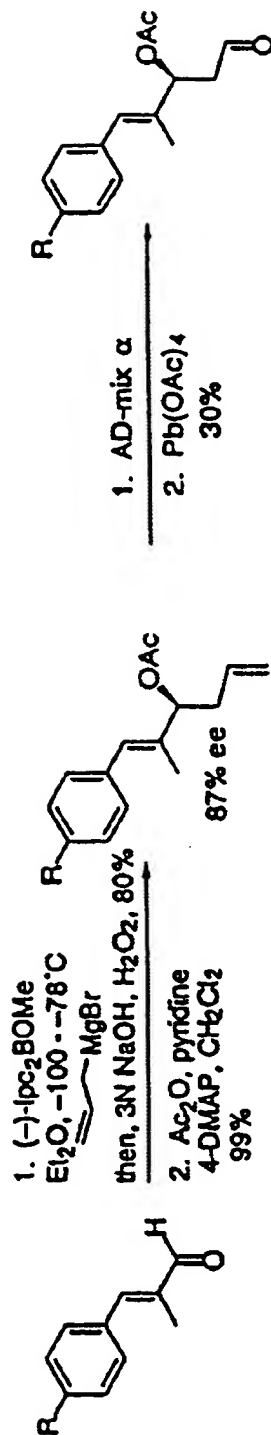
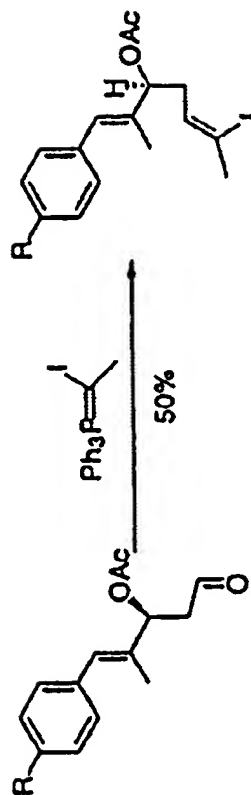


FIG. 26B



R = H, F, CF<sub>3</sub>  
 R=H is the only compound  
 completed, F and CF<sub>3</sub> are nearly  
 completed

[illegible]

FIG. 26D

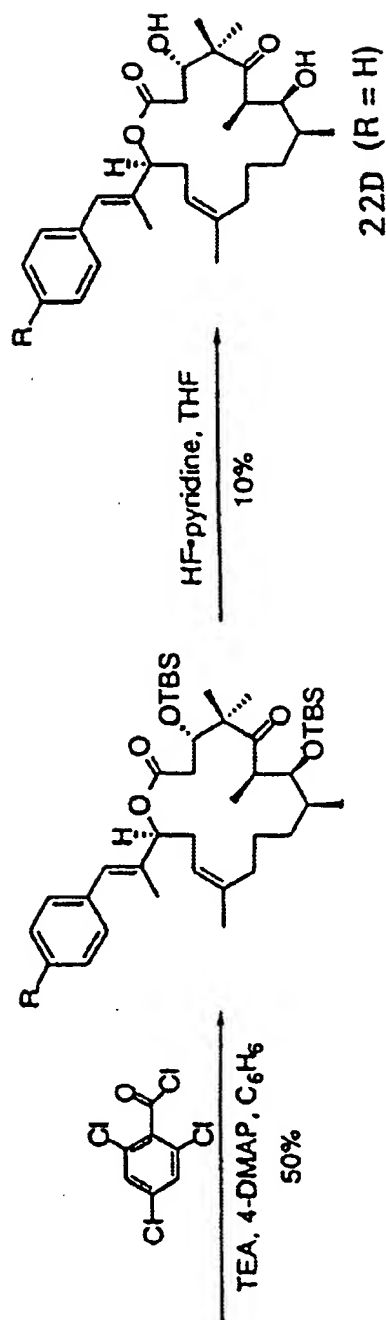


FIG. 27A

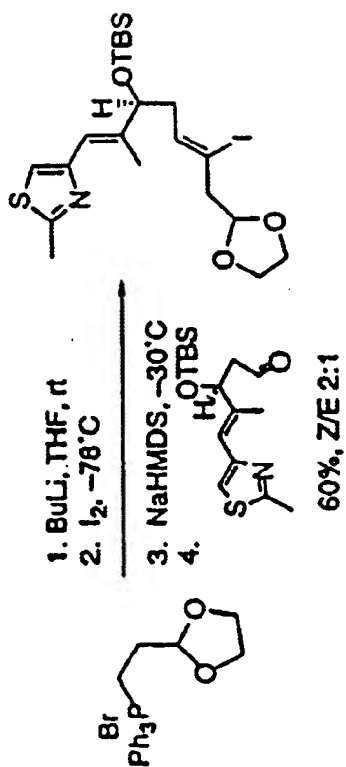


FIG. 27B

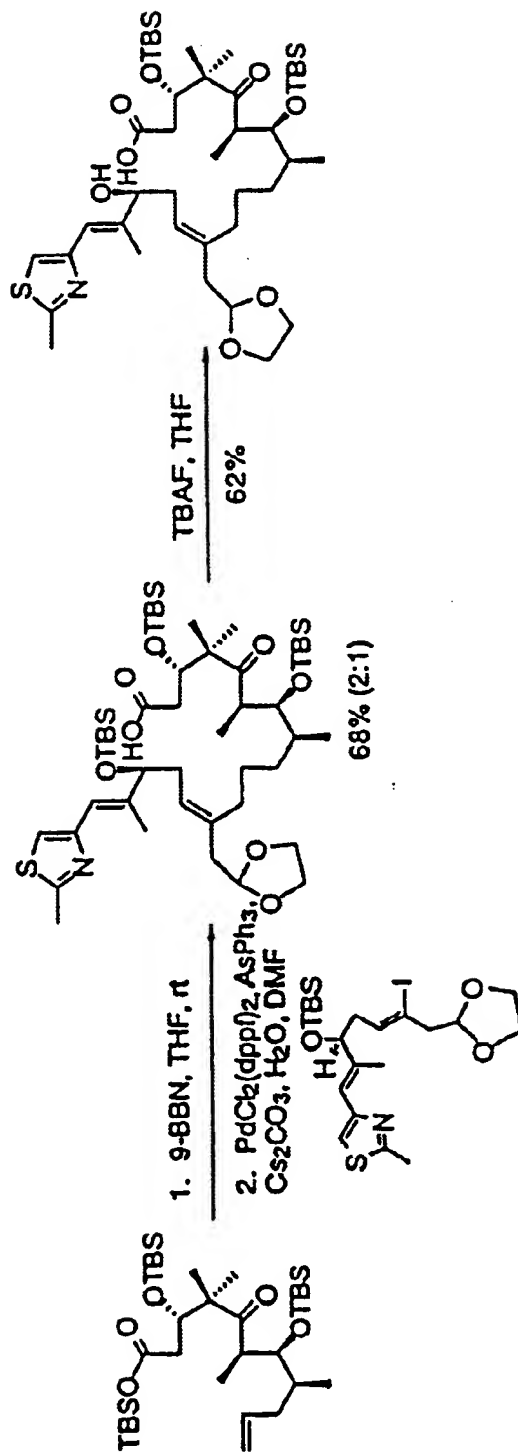
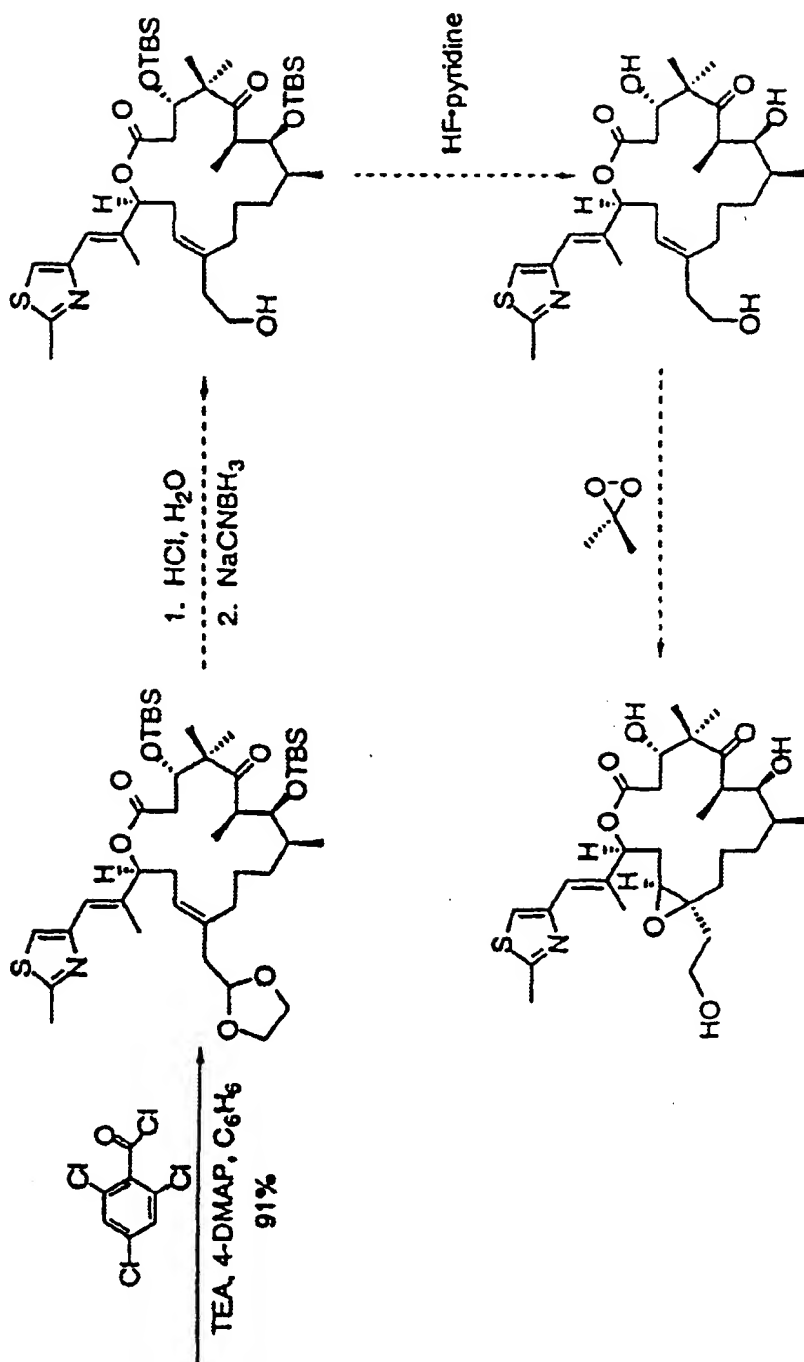


FIG. 27C

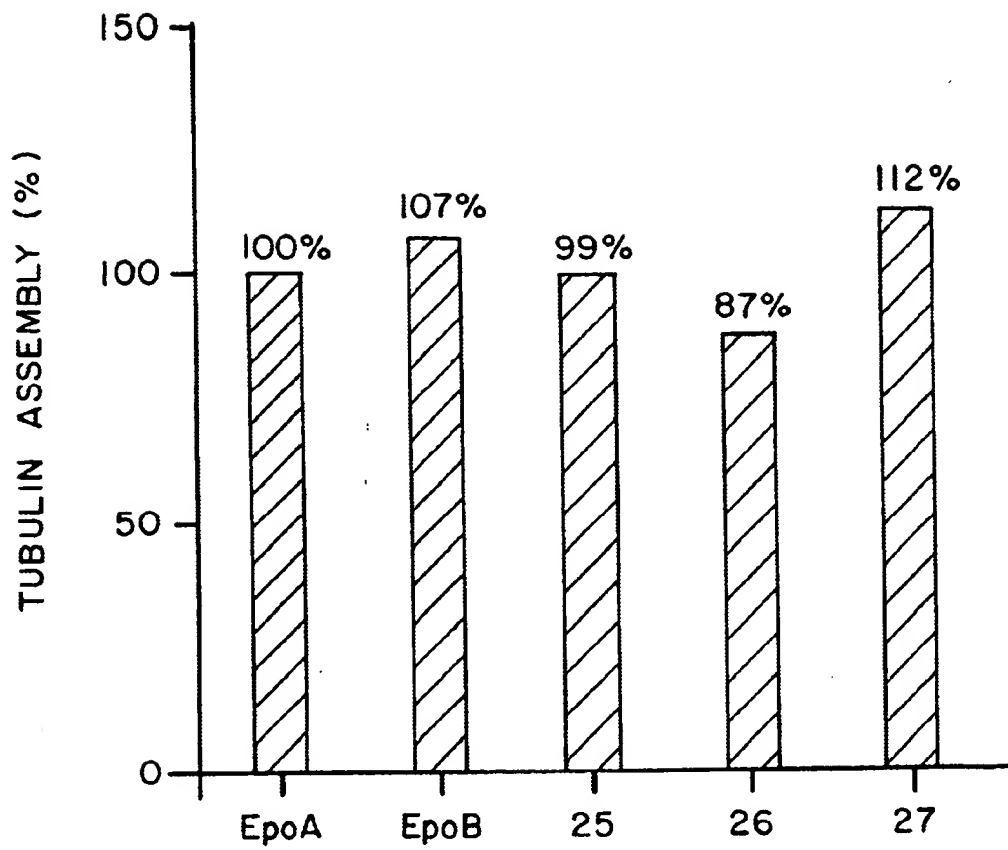






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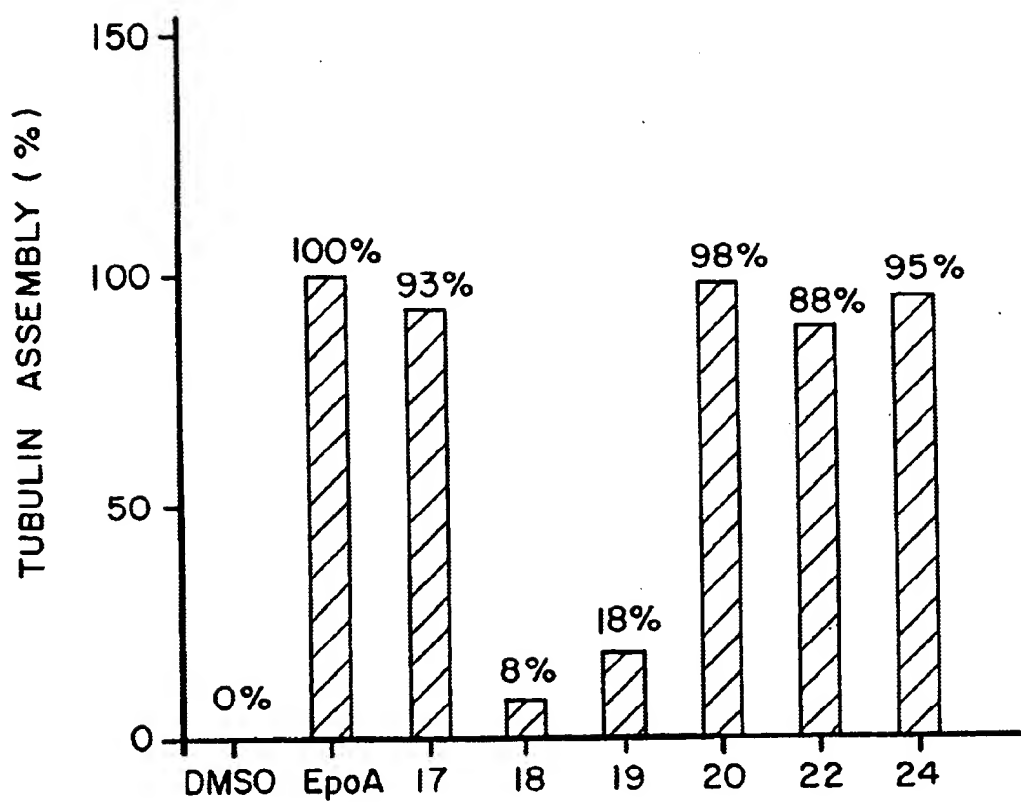
FIG. 28A





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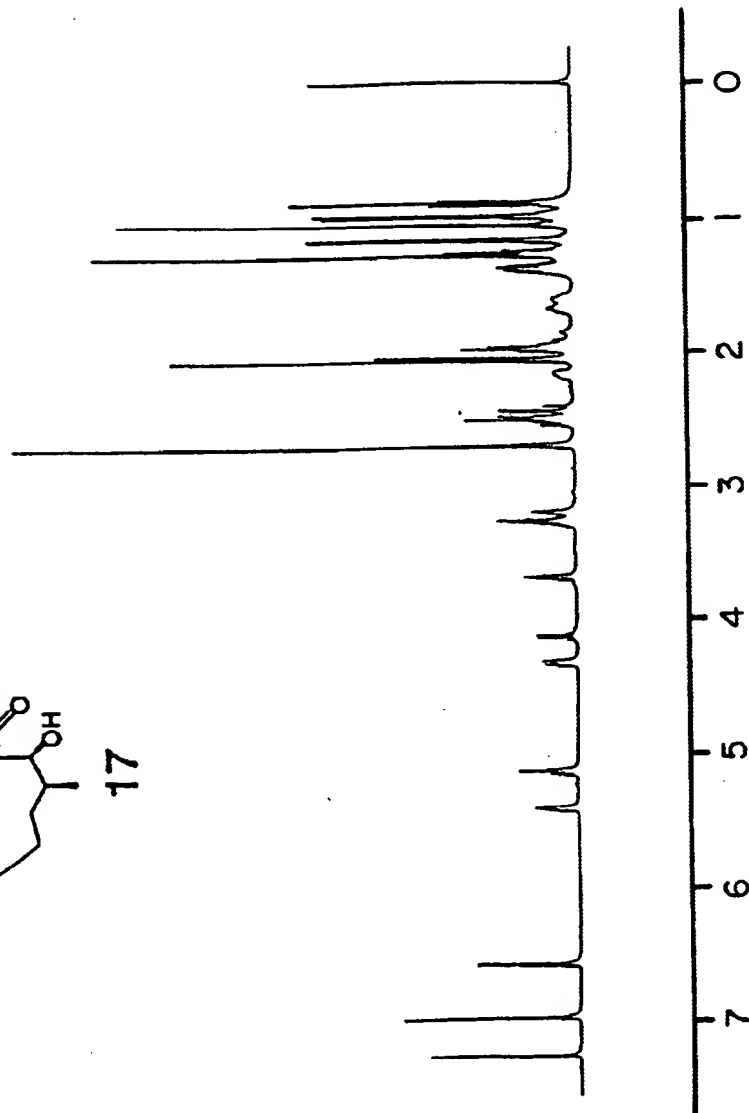
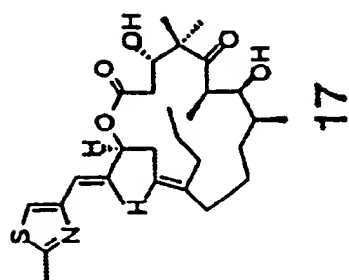
FIG. 28B





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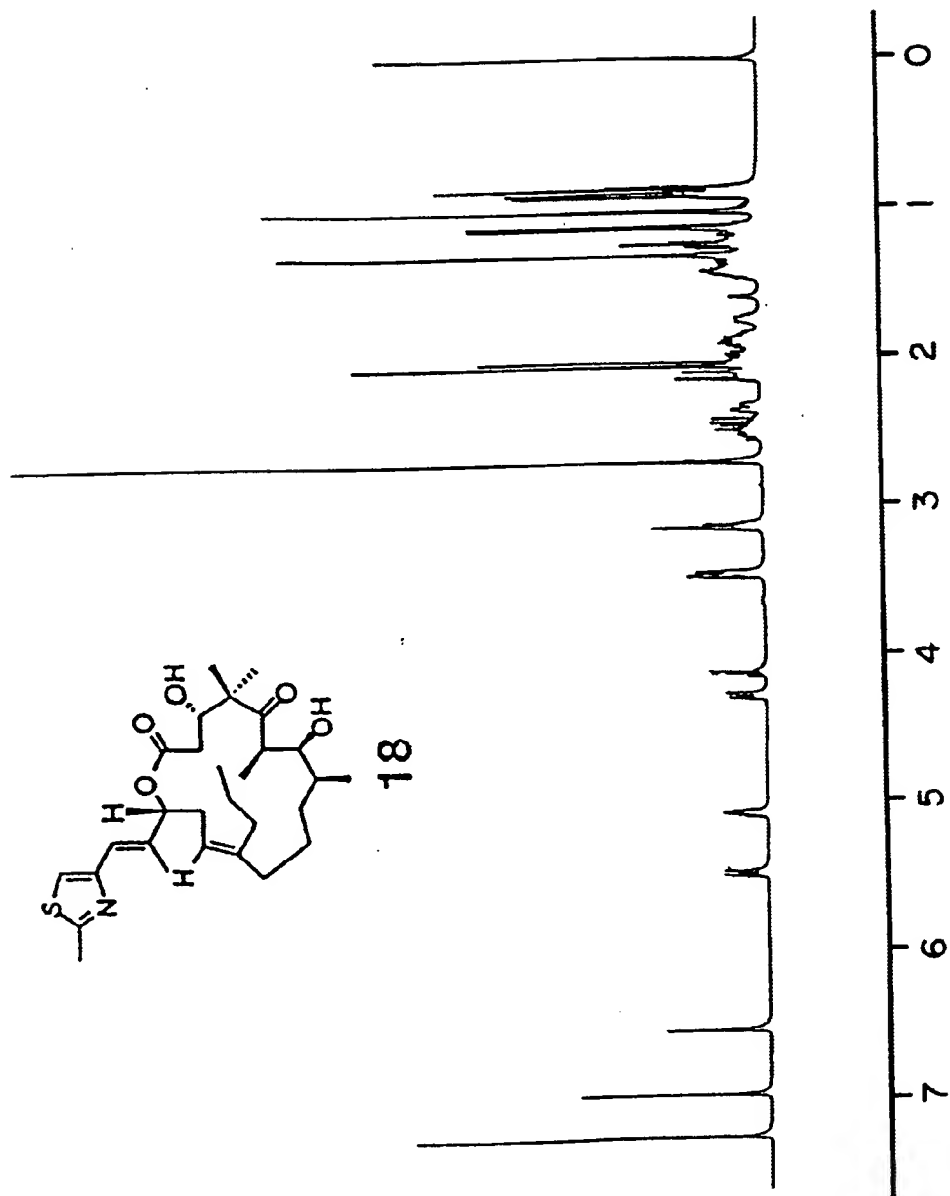
FIG. 29





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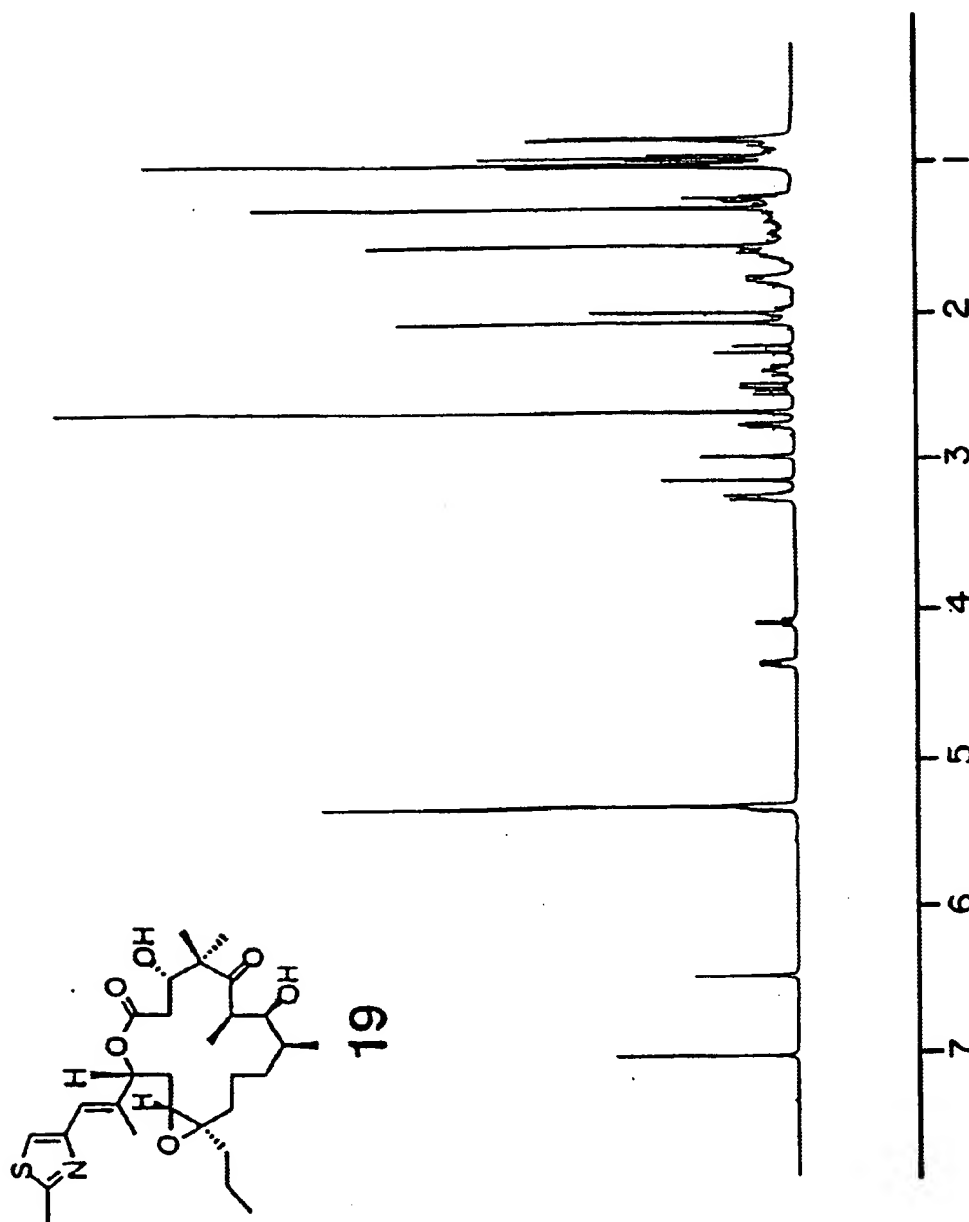
FIG. 30





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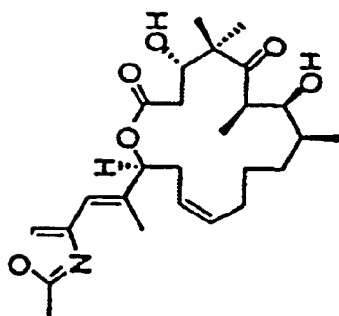
FIG. 31





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FIG. 32



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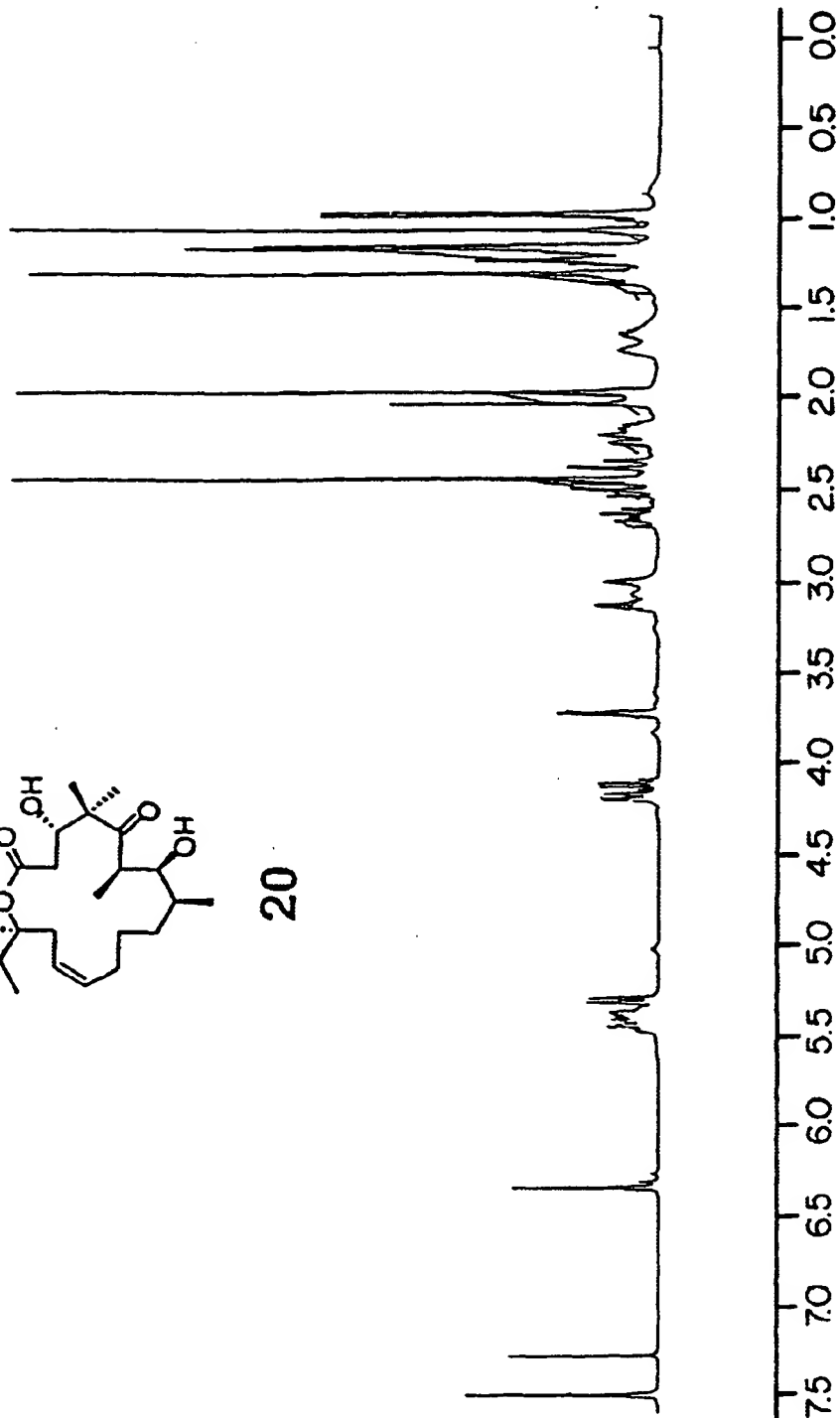
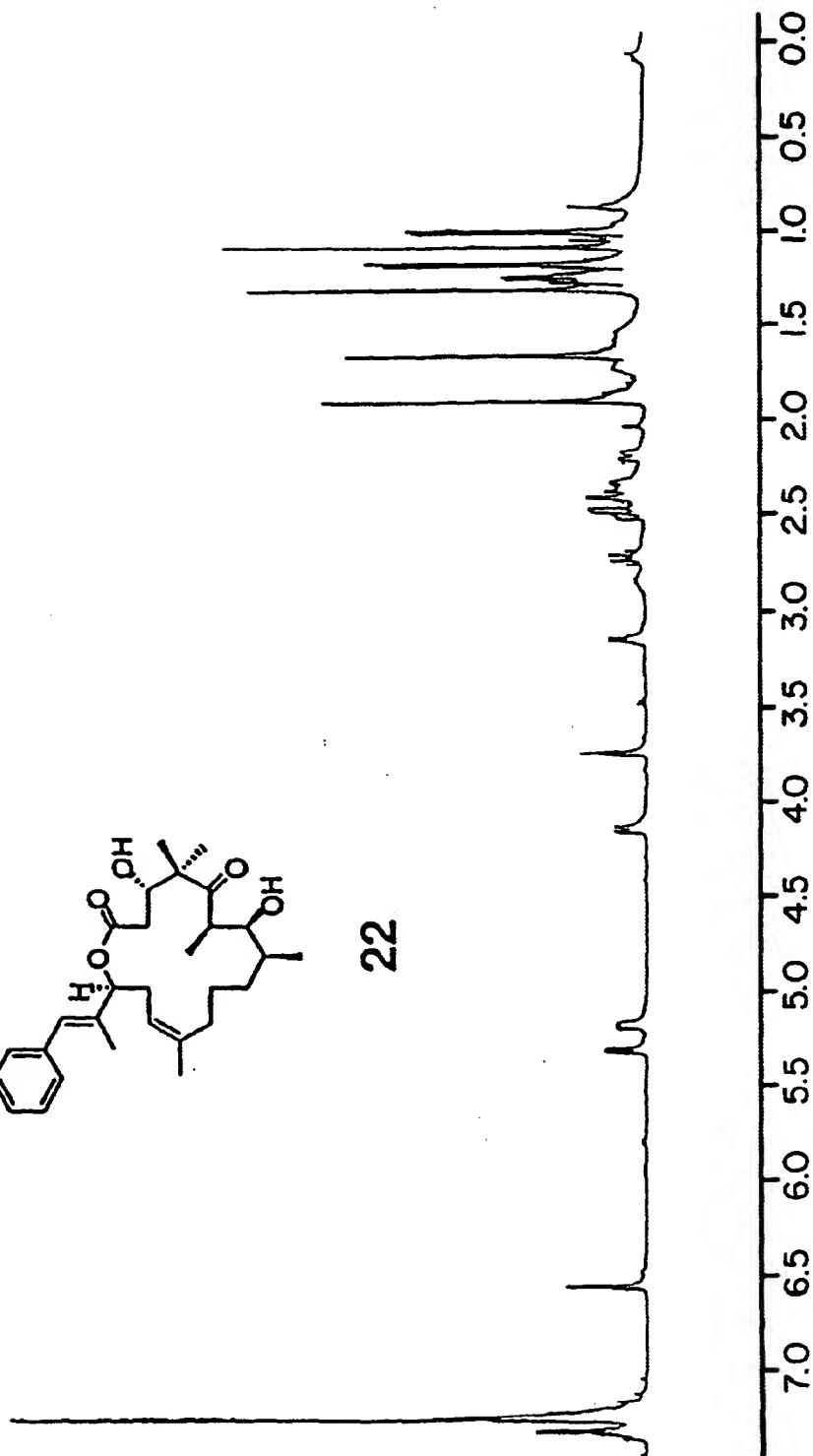
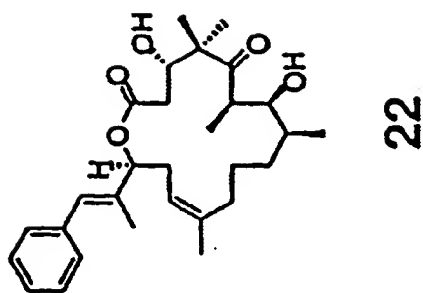




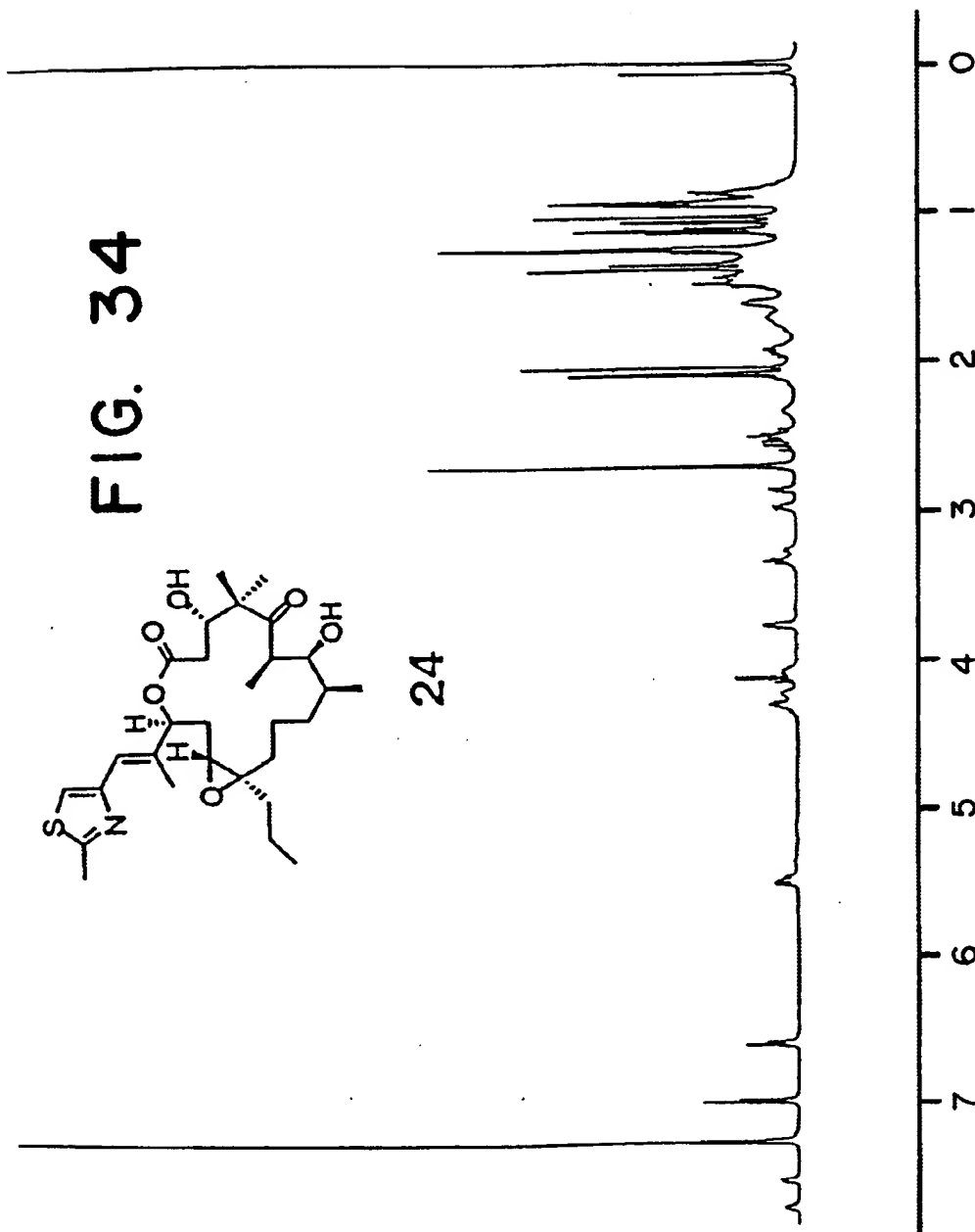
FIG. 33





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FIG. 34





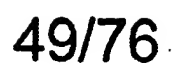
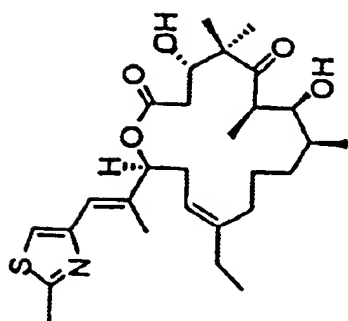


FIG. 35



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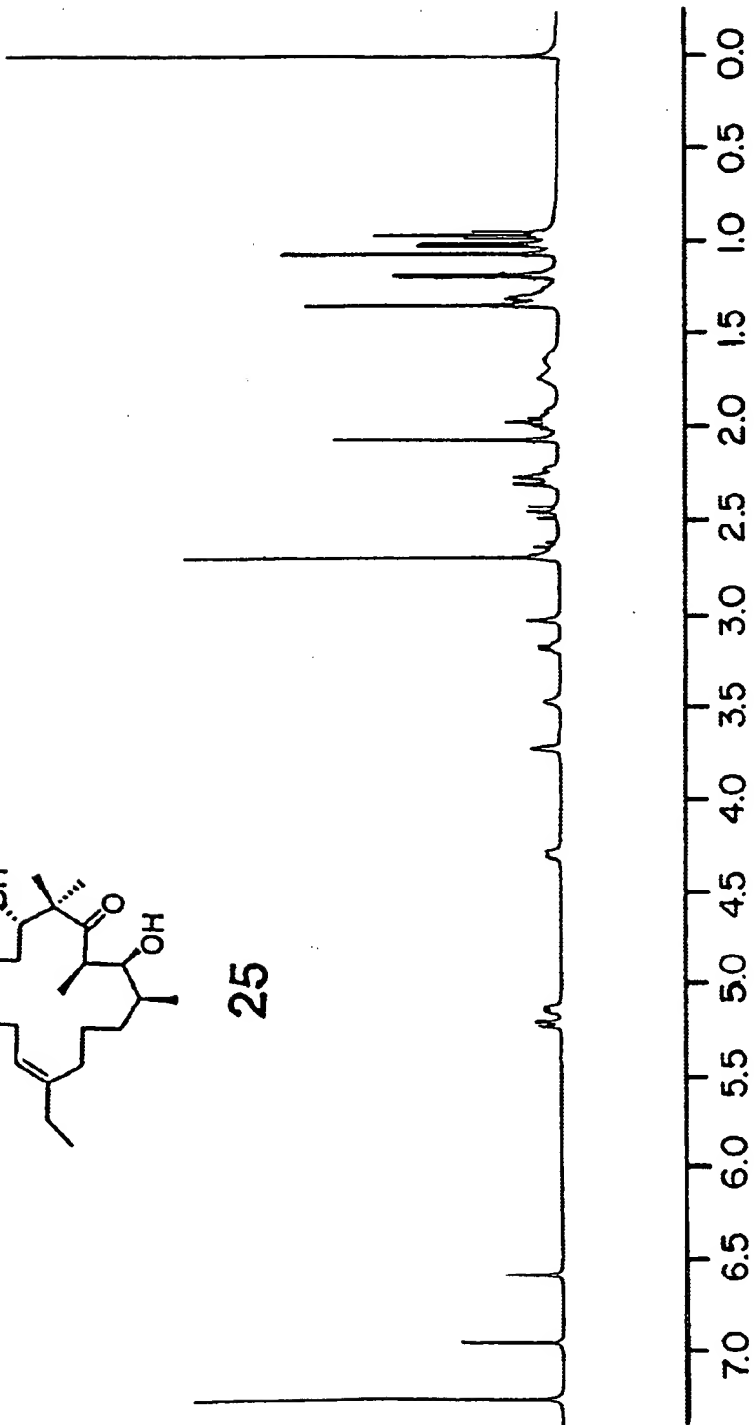
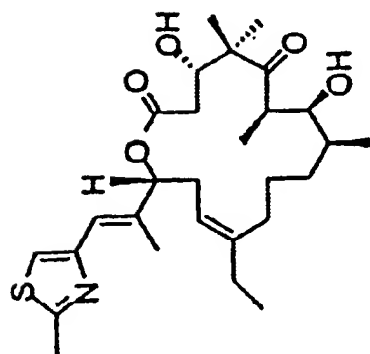




FIG. 36



26

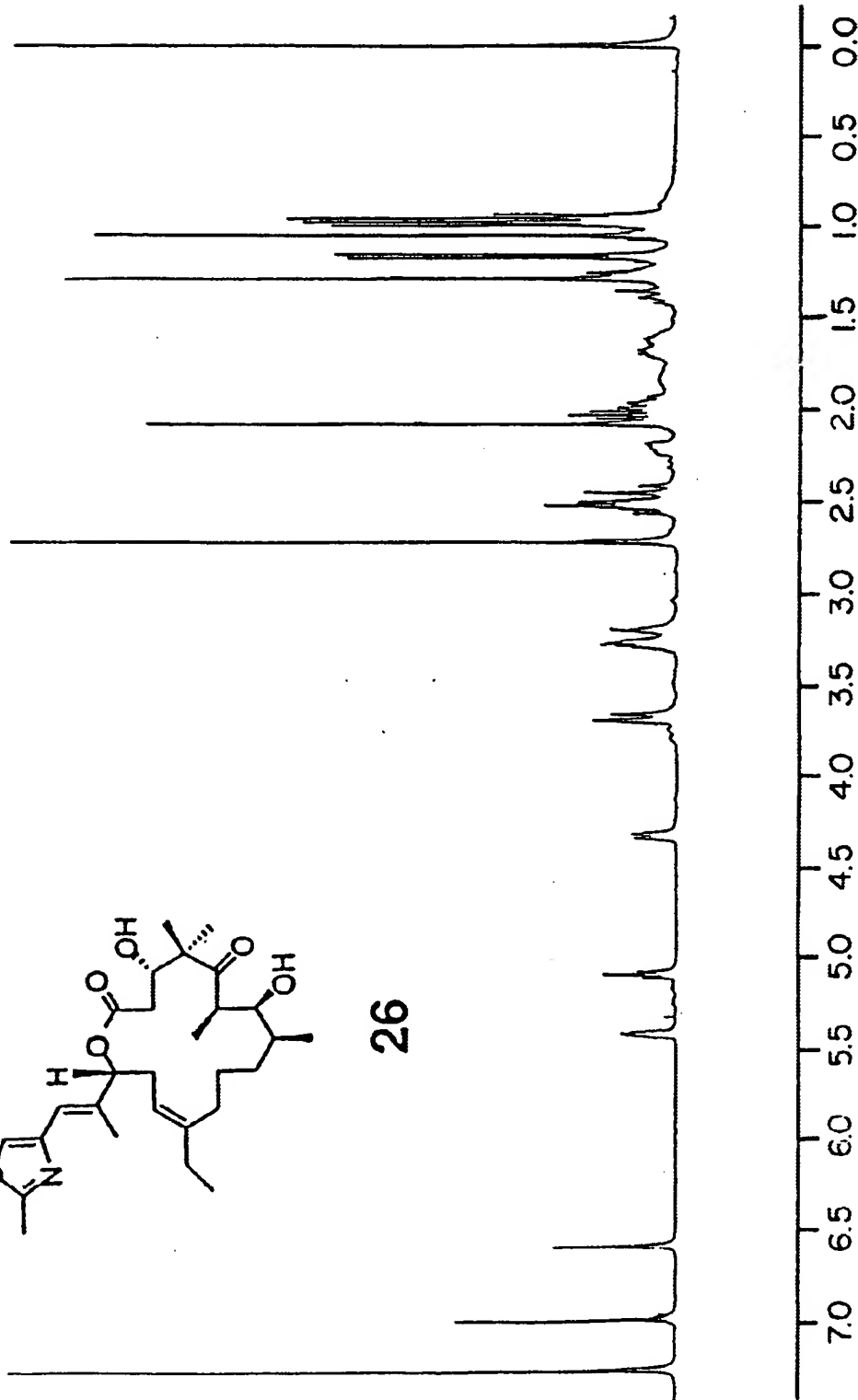
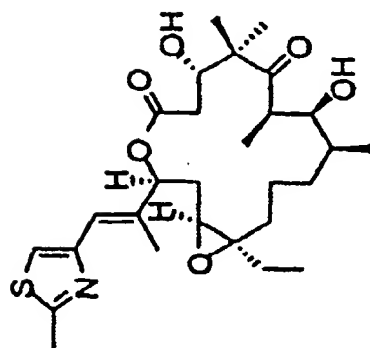
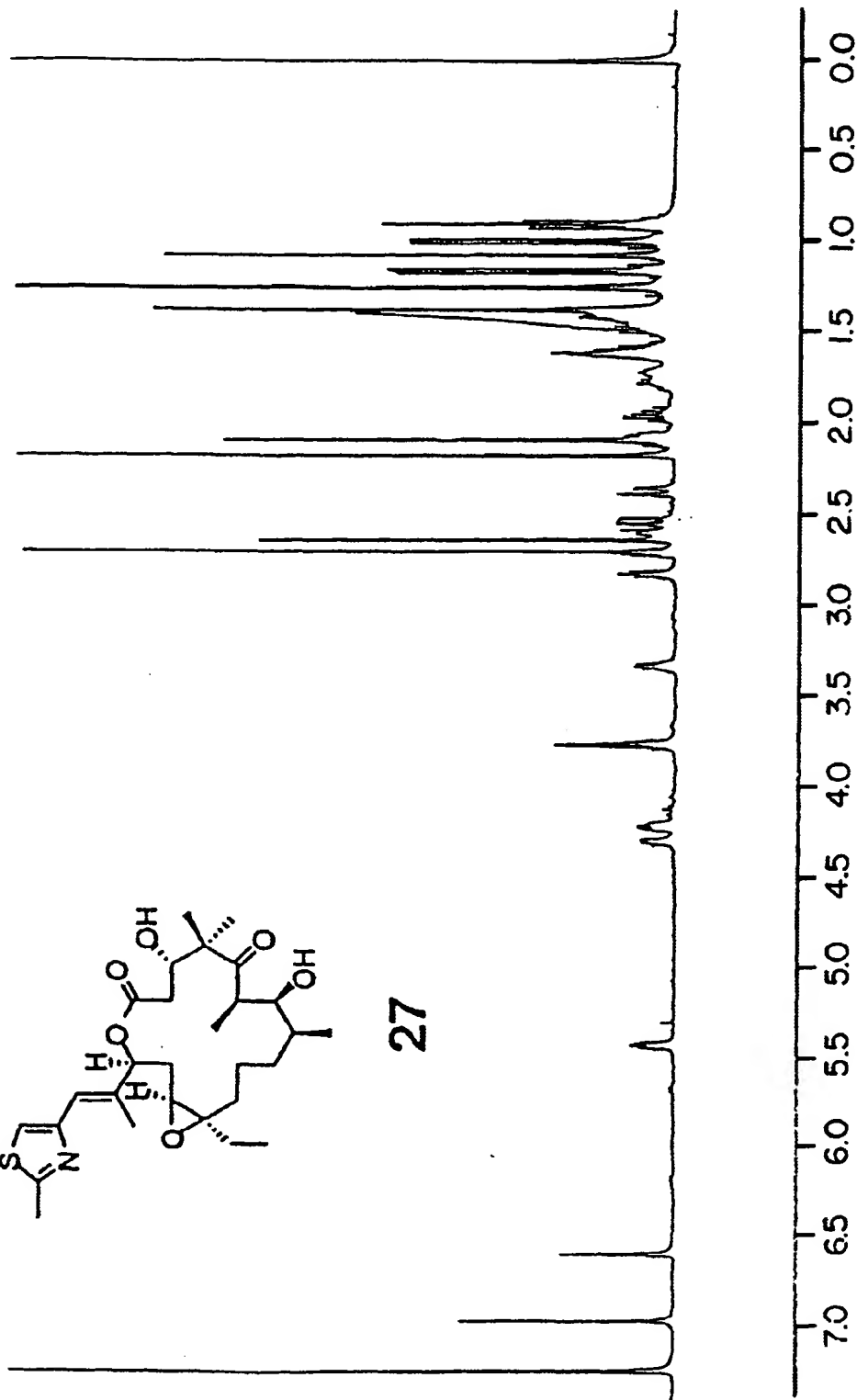




FIG. 37



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FIG. 38

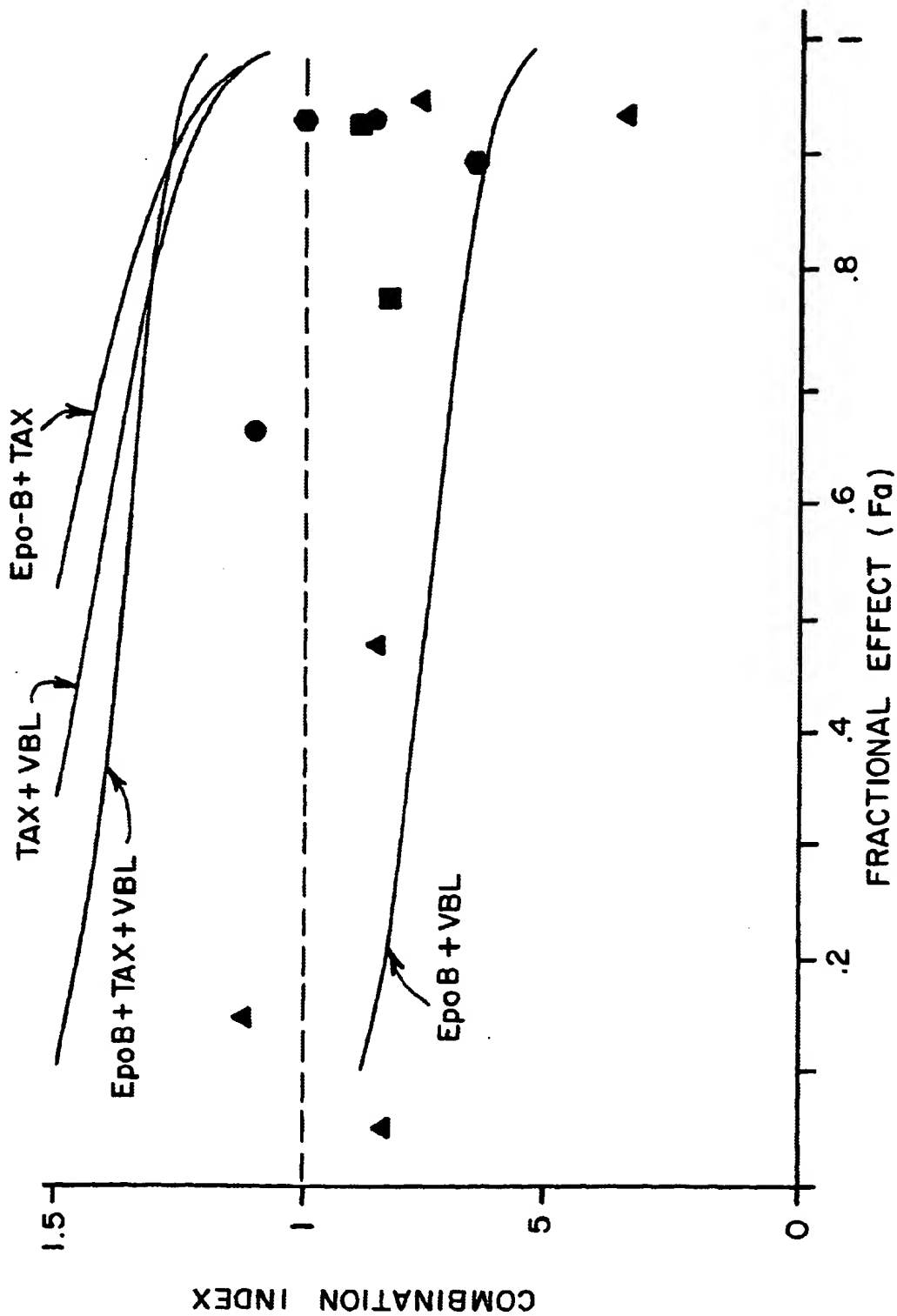
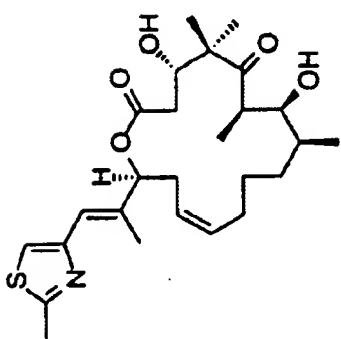


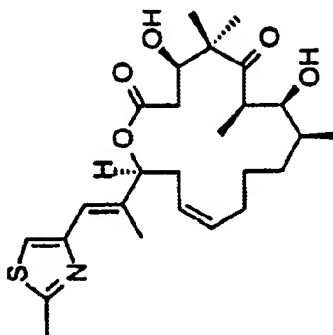
FIG. 39A



desoxyepothilone A

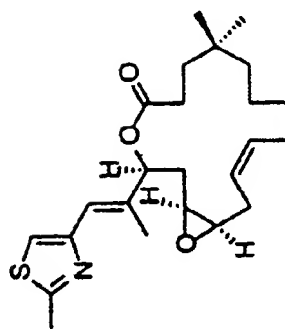
1

(0.022)  
[0.012]



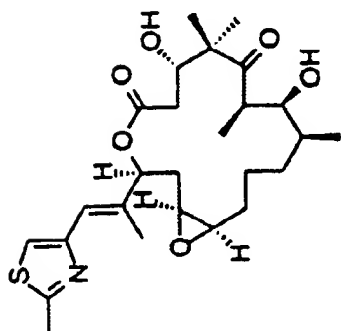
4

(2.12)  
[43.0]



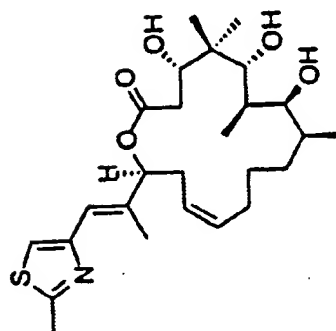
3

(271.1)  
[22.4]



epothilone A

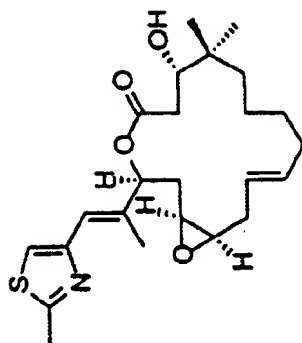
(0.0027)  
[0.020]



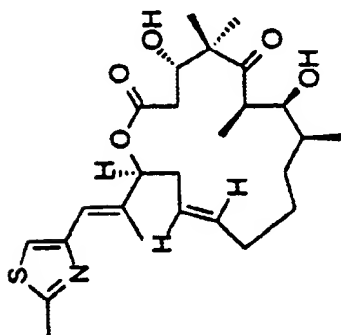
2

(14.23)  
[6.28]

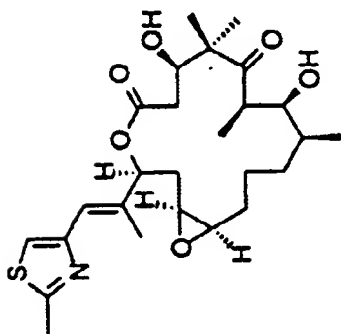
FIG. 39B



7  
 (7.36)  
 [9.82]

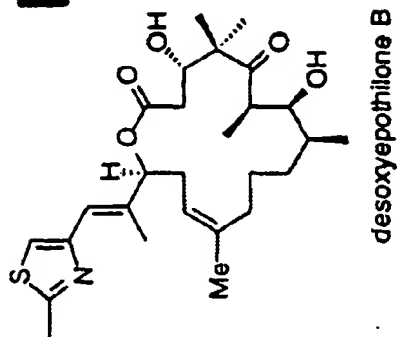


6  
 (0.052)  
 [0.035]

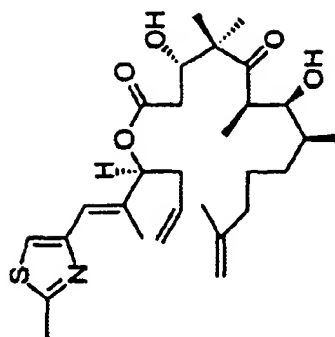


5  
 (>20)  
 [35.2]

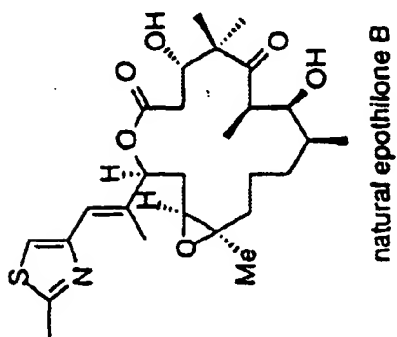
FIG. 40A



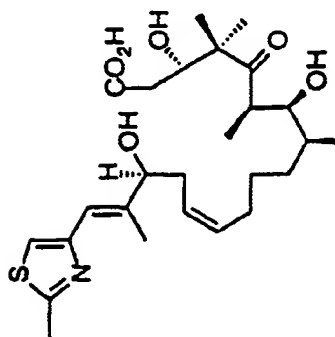
**10**  
(0.0095)  
[0.017]



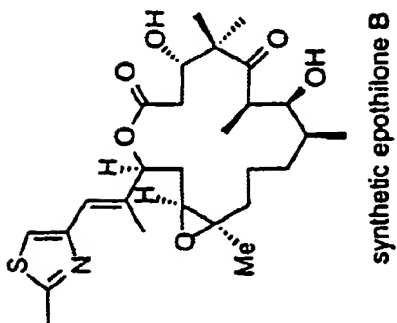
**13**  
(11.53)  
[5.63]



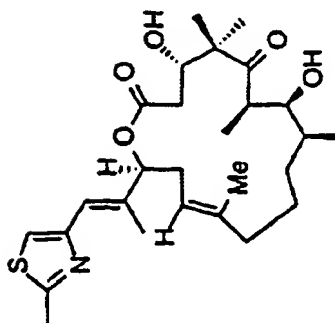
**9**  
(0.00017)  
[0.0012]



**12**  
(0.79)  
[>5]



**8**  
(0.00044)  
[0.0026]



**11**  
(0.090)  
[0.262]

FIG. 40B

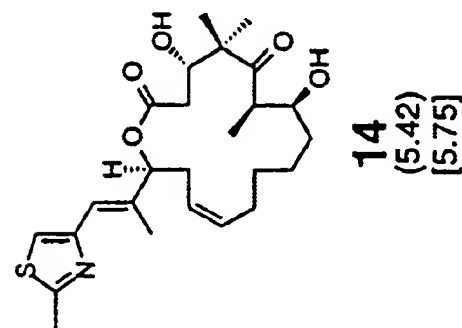
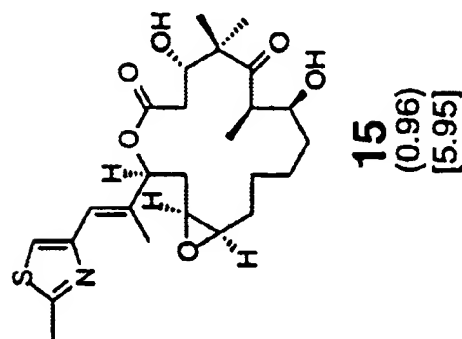
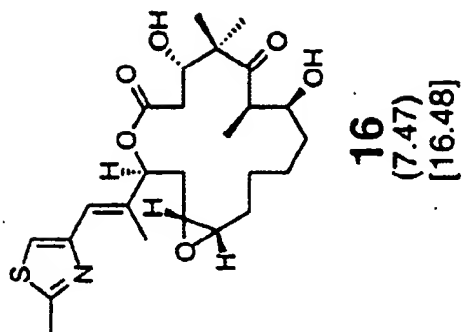
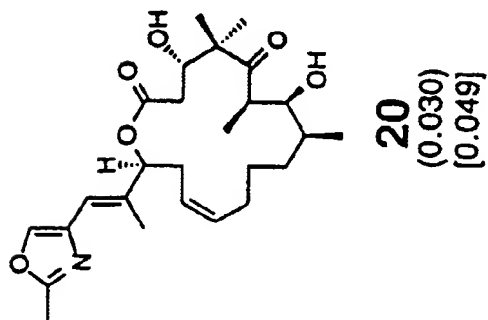
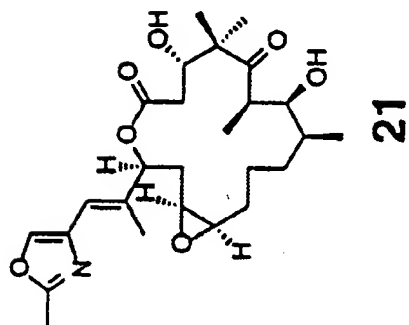
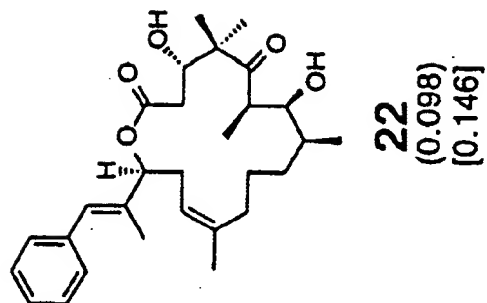
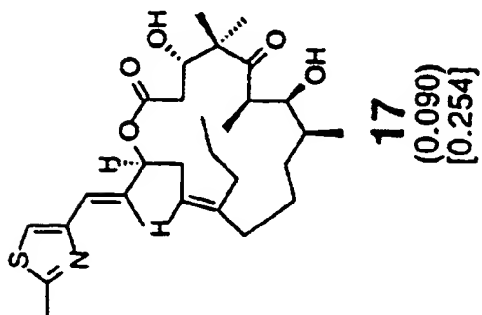
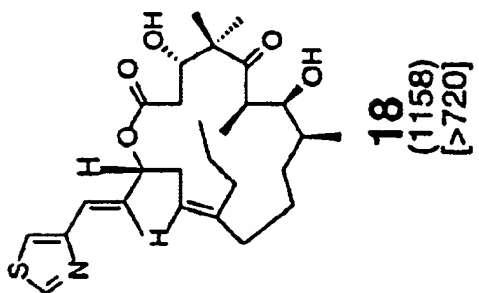
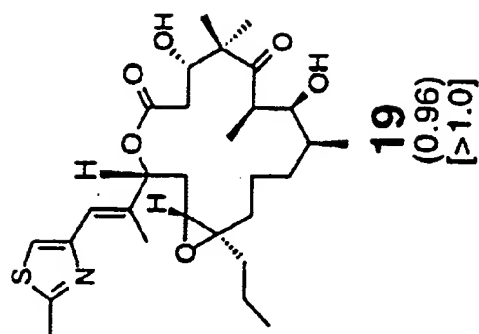




FIG. 41A





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FIG. 41B

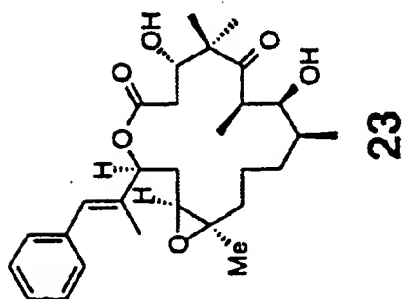
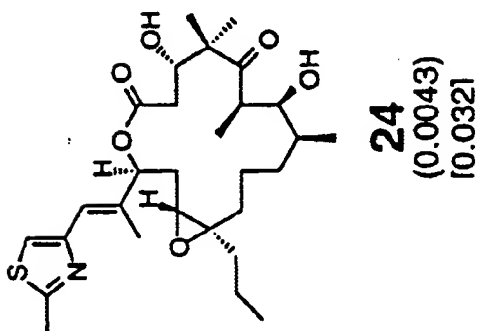
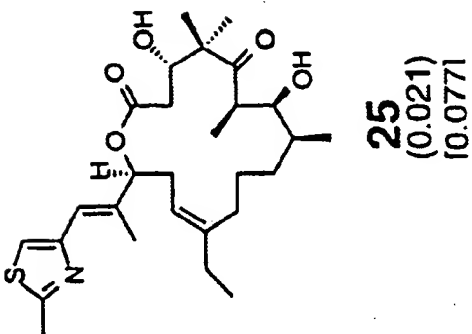
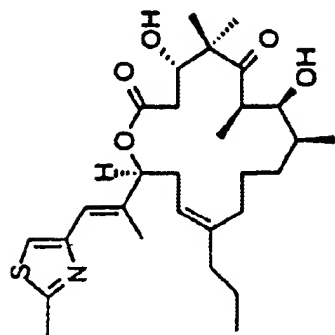
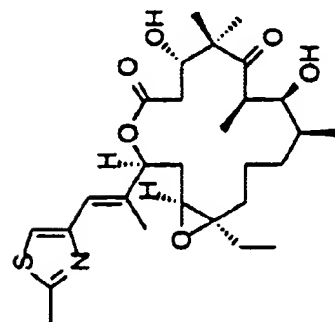


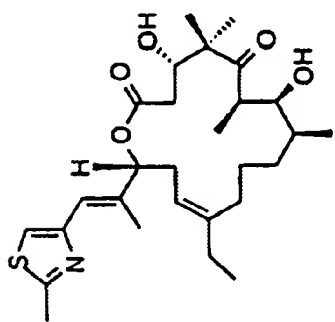
FIG. 42A



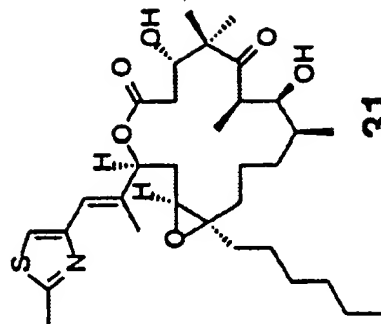
**28**  
 (0.039)  
 [0.067]



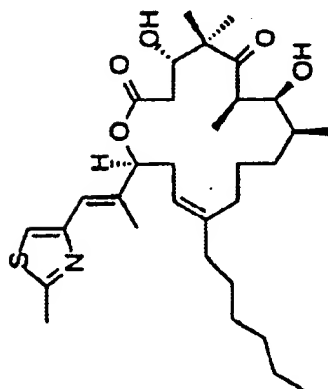
**27**  
 (0.0010)  
 [0.0072]



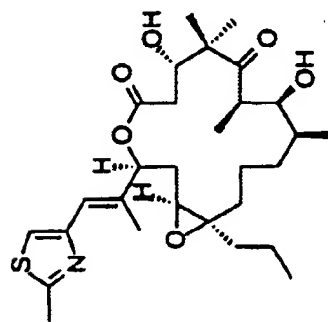
**26**  
 (0.055)  
 [0.197]



**31**  
 (0.027)  
 [0.049]



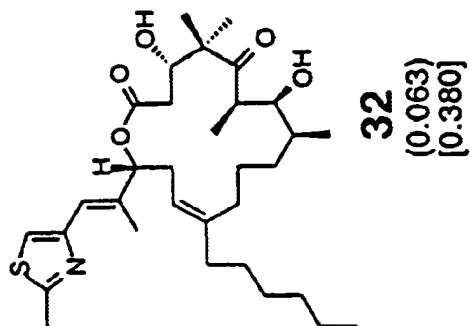
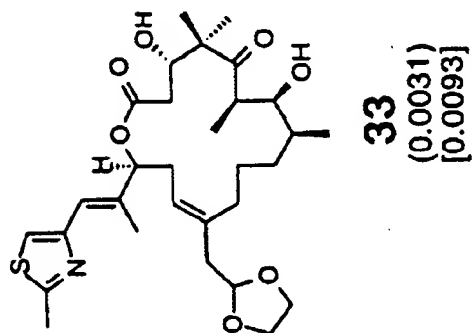
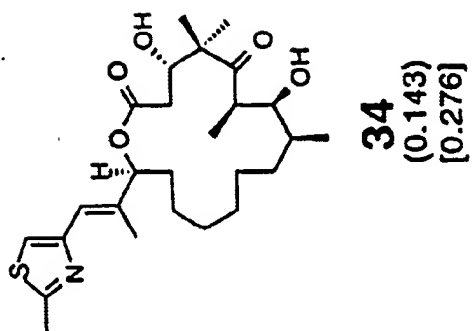
**30**  
 (0.044)  
 [0.108]



**29**  
 (0.0038)  
 [0.0064]

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FIG. 42B



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FIG. 42C

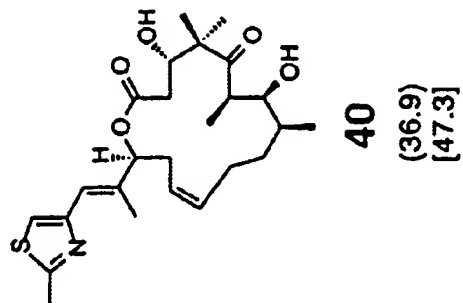
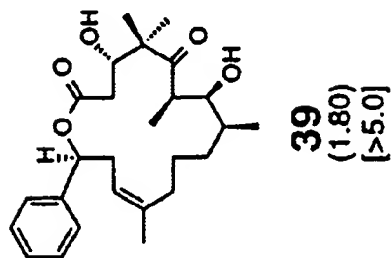
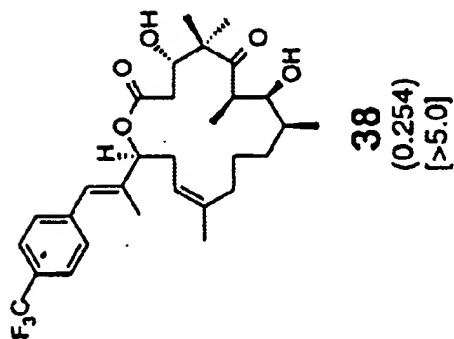
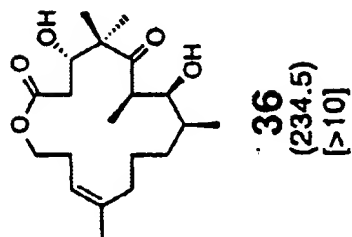
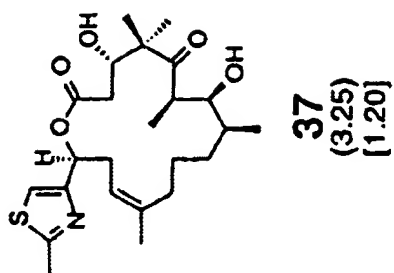
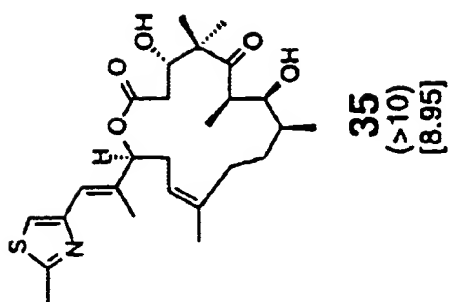
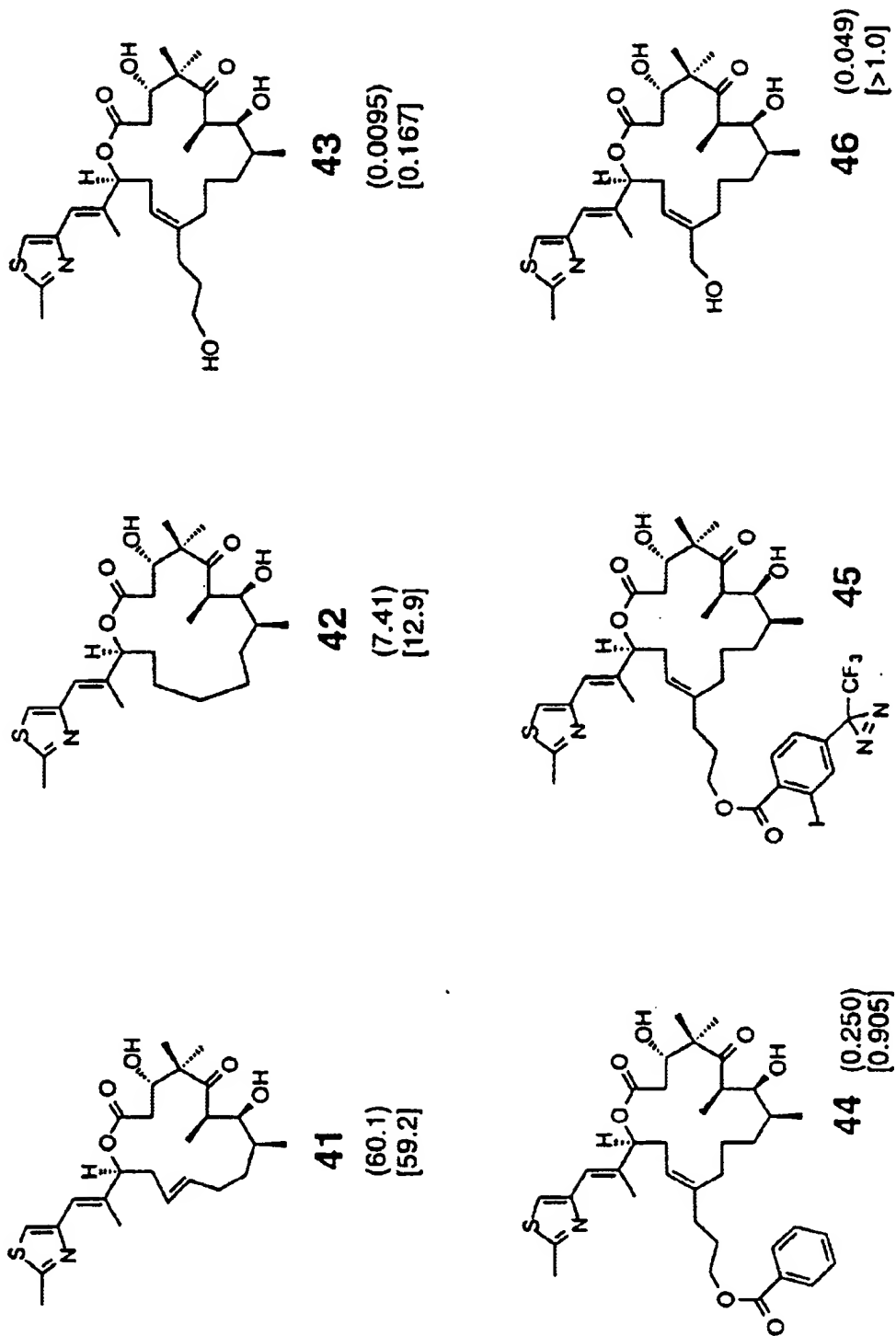


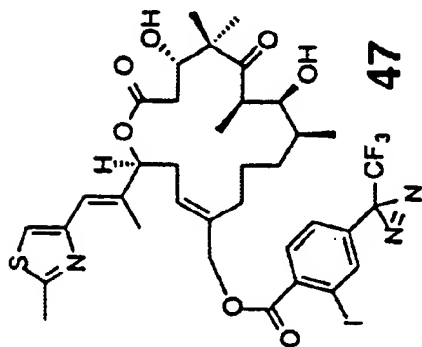
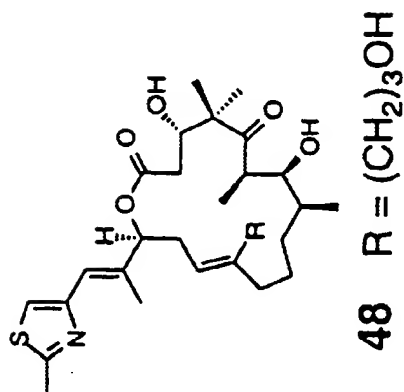
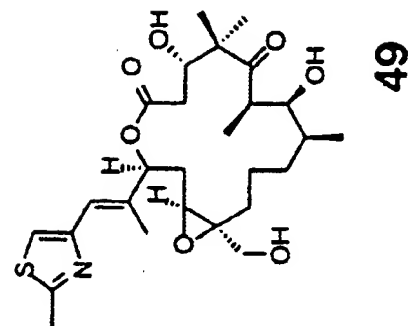
FIG. 42D





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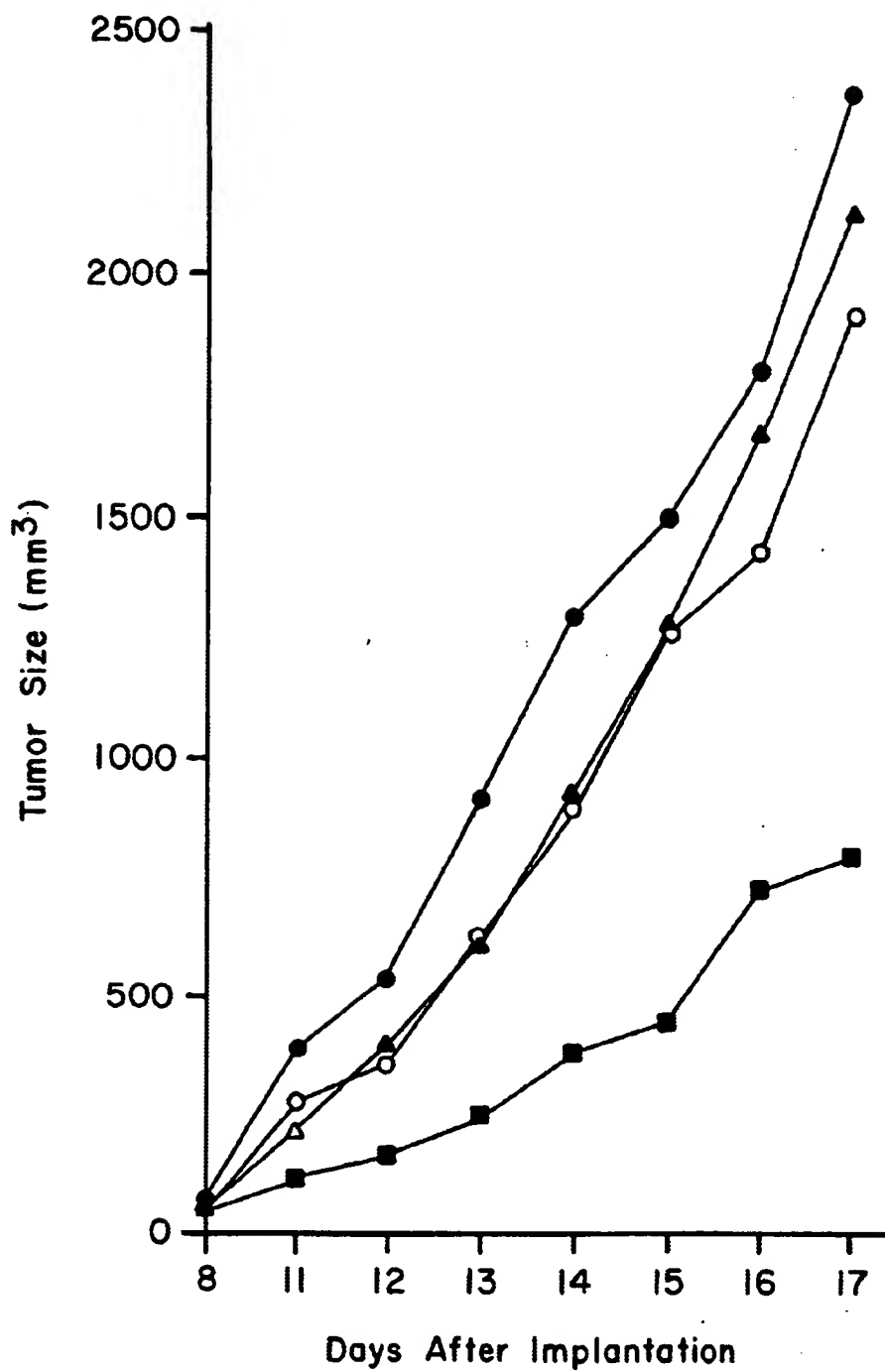
FIG. 42E





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FIG. 43A

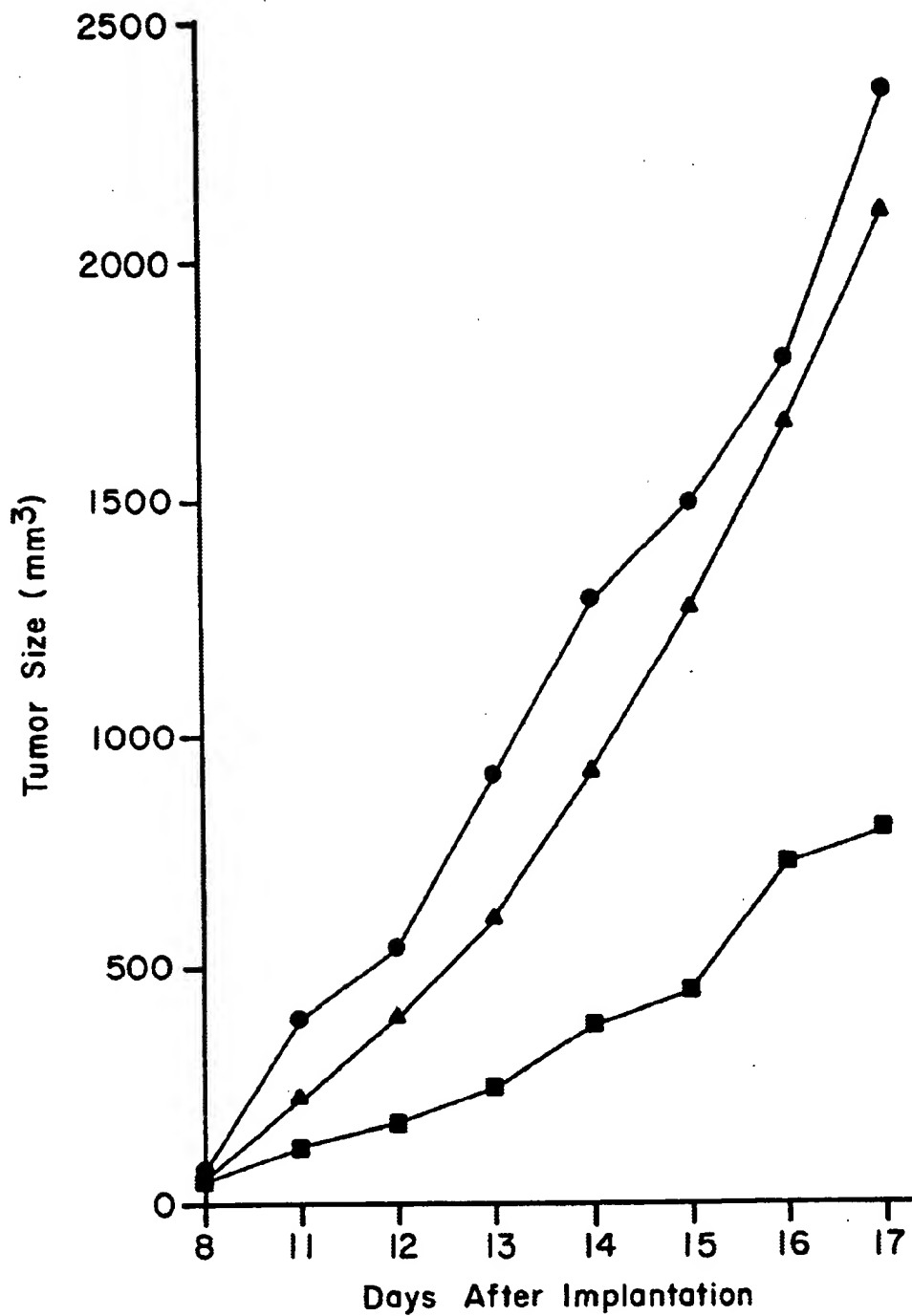






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FIG. 43 B





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FIG. 44A

